

I am comparing, which is scarcely more than 11 millim broad.

P. hirsutus, Stimps., from the Corean seas, differs from *P. Andersoni* by the larger hand being only granulated on its upper margin, and not at all on its outer surface. (See Miers, Proc. Zool. Soc. 1879, p. 31.)

Hilgendorf's *P. longicornis*, from the coast of Mozambique, may be easily distinguished from *P. Andersoni* by its antero-lateral teeth, which are not spiniform. *Pilumnus Bleekeri*, Miers, from New Guinea, presents a spiniform extraorbital angle and a distinct subhepatic spine.

Pilumnus terræ-reginæ, Hasw., from Queensland, presents a patch of small granulations on the mesobranchial regions (which in *P. Andersoni* are smooth), the granules on the larger hand are rounded, and it has a row of obscure granules on the lower border of the merus and hand of the smaller chelipede.

The upper surface of the cephalothorax of *P. vestitus*, Hasw., also from the eastern coast of Australia, is described as presenting no distinct granules, whereas in this species the upper surface is distinctly granulate anteriorly, as already mentioned. *P. vestitus*, however, appears closely allied to *P. Andersoni*, and a more exact knowledge of it is desirable.

42. PILUMNUS SEMINUDUS, *Miers*.

Pilumnus seminudus, *Miers*, *Crustacea of the Voyage of H.M.S. 'Alert,'* 1884, p. 222, pl. xxi. fig. c.

A young female crab found at Owen Island I believe to belong to the above-named species.

The cephalothorax is rather enlarged, the proportion of the breadth to the length being about as 7 to 5. The upper surface, which is a little convex longitudinally and somewhat declivous towards the lateral margins, presents no trace of divisional inter-regional grooves, and is everywhere clothed with a close velvety pubescence. I only observe a very faintly indicated mesial longitudinal furrow. The front is nearly straight and presents a small median incision; the two lobes into which the front is thus divided are *not* separated by a notch from the internal orbital angles, so that the latter constitute at the same time the external angles of the front. The orbital margins are minutely denticulate, though the denticulation of the upper margin is scarcely visible; the internal angle of the lower border

is not at all prominent. The antero-lateral margins are scarcely shorter than the postero-lateral and are armed behind the external angles of the orbits, which are not at all prominent, with four teeth, the anterior one of which is represented by a rather blunt, low, rounded prominence which is itself crenulate. The second resembles the first in being crenulate, but it terminates in a minute spine, and the two posterior teeth are distinctly spini-form. There is no trace of a subhepatic tooth or spine. The endostome is faintly ridged.

The chelipedes and the other legs seem to resemble those of the specimens collected during the voyage of H.M.S. 'Alert.' The left chelipede is much larger than the right and granular, some larger granules of the outer surface of the palm being arranged in longitudinal series. The hand of the smaller chelipede is very hairy externally. The small specimen is only 7 millim. broad and scarcely 5 millim. long.

This species is somewhat allied to *Pilumnus Dehaanii*, Miers, from the Japanese seas, but *P. seminudus* has a more enlarged cephalothorax. Although Miers's specimen agrees very well with the description of *P. seminudus*, I would point out that the existence of *four* antero-lateral teeth has not been clearly indicated by the English carcinologist, and that the granules with which the anterior legs are covered are rather conspicuous.

Pilumnus seminudus has been recorded from the eastern and north-eastern coasts of Australia (Port Denison, Torres Strait).

43. *PILUMNUS LEVIS*, Dana. (Pl. IV. figs. 1 & 2.)

Pilumnus laevis, Dana, *Conspectus Crustaceorum &c. in Proc. Acad. Nat. Sci. Philadelphia*, vol. vi. p. 82 (May 1852).

Two specimens (♂ ♀), not yet full-grown, were collected at Sullivan Island.

In this small species the carapace is broader than long, the proportion of the distance between the last antero-lateral teeth to the length of the cephalothorax (the basal portion of the abdomen, as far as it is visible from above, excluded) being about as 7 to 5. The upper surface is a little convex and perfectly smooth; the regions are quite indistinct, there being no trace of divisional lines, except the usual longitudinal median furrow on the front, which separates the epigastric regions and the usual transverse cervical suture. The upper surface is, however, a little hairy, and presents three elevated transverse lines, which are clothed

with longer hairs, namely—one on the front between the orbits, parallel with the frontal margin, and one on each side of the carapace, starting from the last antero-lateral tooth, separating the antero-lateral portion of the cephalothorax from the postero-lateral, but not reaching as far as the gastric region.

The front is a little broader than a third of the distance between the last antero-lateral teeth, the proportion of that distance to the breadth being as 23 to 9; it is somewhat declivous and divided by a small median triangular notch into two rather prominent and slightly oblique lobes, with a nearly straight or slightly emarginate anterior margin. The frontal lobes are not continuous with the orbital margin, but separated laterally from the internal orbital angles by a small angular cleft. The orbital margins, both the superior and the inferior, are entire and not denticulate; the upper margin presenting moreover no incision, this species belongs to the subgenus *Parapilumnus*, Kossmann.

The external orbital angle is not at all prominent and the antero-lateral margins of the cephalothorax, which are a little shorter than the postero-lateral, are armed with three small spiniform teeth behind the angle of the orbits, the last being a little smaller than the two anterior ones.

The pterygostomian regions are perfectly smooth and there is no trace of a subhepatic spine. As regards the male abdomen, I will only remark that the penultimate joint is a little broader than long.

The anterior legs or chelipedes are of unequal size, and in both the specimens the right is the larger. The larger chelipede is everywhere smooth and glabrous, and does not present even a trace of granulation, but appears polished and shining. The arm is very short, scarcely extending beyond the lateral margins of the carapace; its anterior margin is armed with two or three small acute teeth. The wrist has a polished convex upper surface, and is armed at its internal angle with a short though acute tooth. The hand is very large, like the wrist, and nearly as long as the breadth of the cephalothorax; its surface is everywhere smooth, convex, polished, and glabrous. The fingers are also smooth, not sulcate, and their pointed tips cross one another.

The smaller chelipede resembles the larger, but the wrist and the hand are a little hairy and the mobile finger is slightly sulcate longitudinally.

The ambulatory legs are tolerably slender, resembling those of *Pilumnus cursor*, A. M.-Edw., and they are slightly hairy.

In the larger specimen, the male, the distance between the last antero-lateral teeth measures only $4\frac{2}{5}$ millim., the cephalothorax being $3\frac{2}{5}$ millim. long. According to Dana the carapace of the adult is nearly 3''' broad.

This little crustacean has hitherto only been recorded from the Strait of Balabac.

Genus ERIPHIA, Latr.

44. ERIPHIA LÆVIMANA, Latr.

Eriphia lævimana, Latreille, *Milne-Edwards, Hist. Nat. Crust. t. i. p. 427*; Heller, *Crustaceen der Novara-Reise*, p. 24; Stimpson, *l. c. p. 35*; *Alph. Milne-Edwards, l. c. p. 255*.

See also:—Miers, *On Malaysian Crustacea, Ann. & Mag. Nat. Hist.* 1880, 5th ser. vol. v. p. 237; and Hilgendorf, *Monatsber. k. Akad. d. Wiss. Berlin*, Nov. 1878, p. 797.

Ten fine specimens of this species are in the Collection, three very young males and seven adult females; four of them were collected at Sullivan Island, four at Owen Island, one at King Island, and one at Elphinstone Island.

In all the adult females the outer surface of the wrist and of the hands in both chelipedes is wholly smooth and without tubercles, so that they are typical representatives of this species; but in the smallest male specimen from Owen Island, the carapace of which is only 10 millim. broad, the outer surface of both chelipedes is covered with crowded acute tubercles. These tubercles, however, have already begun to disappear in a male a little larger from the same locality, which has a carapace 14 millim. broad; the tubercles in this specimen only occur on the outer surface of the smaller hand, and are even much less developed than in the smallest male individual. I conclude, therefore, that very young male specimens of *E. lævimana* present this tuberculation, which, however, soon disappears.

The Collection in the Leyden Museum contains two specimens from the Moluccas and one from Amoy, in which the outer surface of the larger hand is smooth, but that of the smaller tuberculated.

Eriphia lævimana, the type species, the chelipedes of which are wholly smooth, has been collected on the coasts of Mozambique and Natal, at Mauritius, the Nicobar Islands, and the Malayan

Archipelago. The Leyden Museum contains specimens also from Padang, Timor, Xulla-Bessy, Gebeh, Amboina, and Halmahera. It has also been found on the coast of New Caledonia and on many islands of the Pacific Ocean, the Fiji and Samoa Islands, and the Paumotu Archipelago; it is, moreover, recorded from the Philippines, the Loo-Choo Islands, and even from the Japanese seas (Stimpson).

Genus *TRAPEZIA*, *Latr.*

45. *TRAPEZIA CYMODOCE*, *Herbst.*

Cancer cymodoce, *Herbst, Krabben und Krebse*, iii. pl. li. fig. 5.

Trapezia dentata, *Alph. Milne-Edwards, Nouv. Arch. du Muséum Hist. Nat.* 1873, t. ix. p. 261.

Trapezia cymodoce, *Miers, Ann. & Mag. Nat. Hist.* 1878, 5th ser. vol. ii. p. 409.

Trapezia cymodoce, *de Man, Notes from the Leyden Museum*, vol. ii. p. 177.

Two specimens were collected, one at Elphinstone Island and one at King Island.

Trapezia cymodoce has been collected in the Red Sea (Gulf of Suez, Djeddah), at Ceylon, in the Malayan Archipelago (Amboina, Manipa, Xulla-Bessy), the Philippine Islands, and finally on the coasts of New Caledonia, Australasia, the Fiji Islands, and the Marquesas group.

Family PORTUNIDÆ.

Genus *NEPTUNUS*, *de Haan.*

46. *NEPTUNUS PELAGICUS*, *Linné.*

Cancer pelagicus, *Linné, Mus. Lud. Utr.* p. 434.

Portunus pelagicus, *Fabricius, Suppl. Entom. Syst.* p. 367.

Lupa pelagica, *H. Milne-Edwards, Hist. Nat. Crustacés*, t. i. p. 450.

Neptunus pelagicus, *Alph. Milne-Edwards, Etudes Zoolog. sur les Portuniens récents, in Archives du Muséum d'Histoire Naturelle*, 1861, t. x. p. 320.

A single young male specimen was collected at Elphinstone Island.

Neptunus pelagicus is distributed throughout the whole Indo-Pacific region from the Red Sea and Zanzibar as far as Tahiti.

47. *NEPTUNUS GLADIATOR*, *Fabr.*

Portunus gladiator, *Fabricius, Suppl. Entom.* p. 368.

Lupa gladiator, *Milne-Edwards, Hist. Nat. Crustacés*, t. i. p. 456.

Amphitrite gladiator, de Haan, *Fauna Japonica*, *Crust.* p. 39, pl. i. fig. 5.
Neptunus gladiator, *Alph. Milne-Edwards*, *l. c.* p. 330.

Two very young male specimens in the Collection I refer with some hesitation to *N. gladiator*.

In the larger specimen, collected in the Mergui Archipelago, the distance between the tips of the epibranchial spines measures only 19 millim., the cephalothorax being $10\frac{1}{4}$ millim. long. The other, still younger individual was found at Owen Island.

Neptunus gladiator, Fabr., *N. argentatus*, White, *N. medius*, Stimps., and *N. gracilimanus*, Stimps., are most closely allied species of a section distinguished by the posterior margin of the arms of the chelipedes being bispinose. These species inhabit the same seas, and I think some of them may hereafter prove to be identical. *N. gladiator* may easily be distinguished from the others by the spine with which the upper margin of the orbits is armed. In the Mergui specimens, however, I do not observe this spine, but the external angle of the median lobe of the supraorbital margin only projects a little angularly forward: I suppose that this characteristic spine does not occur in very young specimens. In other respects they entirely agree with *N. gladiator*. The two median frontal teeth are distinctly developed; they are, however, much smaller and narrower than the next, but project equally forward. *Neptunus argentatus*, according to Prof. A. Milne-Edwards, differs by the carapace being comparatively less enlarged, by the absence of the supraorbital spine, and by the median frontal teeth being rudimentary. Young individuals of these species doubtless closely resemble young specimens of *Achelous granulatus*.

48. NEPTUNUS (HELLENUS) ANDERSONI, n. sp. (Pl. IV. figs. 3 & 4.)

One adult female specimen, bearing eggs, was collected at Elphinstone Island.

This remarkable little *Neptunus* belongs to the subgenus *Hellenus*, in which Prof. A. Milne-Edwards grouped those species which have the posterior angles of the cephalothorax acute and often armed with a short spine (A. Milne-Edwards, "Études sur les Crustacés Podophthalmiens," pts. v. and vi., in 'Mission Scientifique au Mexique,' *Recherches Zoolog.* iii. partie, p. 210, 1879). This species also presents some affinities to the genus *Xiphonectes* of the same author, which I am inclined to regard at

most as only a subgenus of *Neptunus*. Hitherto four species of the subgenus *Hellenus* and three of *Xiphonectes* were known as inhabitants of the Indo-Malayan seas.

Neptunus Andersoni in its outer form and physiognomy appears closely allied to *Neptunus (Hellenus) rugosus*, A. Milne-Edw., from Australia; but it is distinguished by the arms of the chelipedes not bearing one but two spines. It also greatly resembles *Neptunus (Hellenus) hastatoides*; but *N. Andersoni* presents a much broader frontorbital margin in proportion to the length of the carapace, and the arms of the chelipedes project less beyond the antero-lateral margins of the cephalothorax than in that species.

The upper surface of the carapace appears extremely uneven, as in *N. rugosus*, for it is not only very much embossed, but many lobules even rise into more or less developed, slightly granulated tubercles. Two slightly elevated tubercles are found on each protogastric lobe, and a somewhat larger tubercle is placed on the mesogastric lobe; behind the latter, two tubercles are observed on the cardiac region, placed in a transverse line close together, and more elevated than all the others. A single median tubercle occupies the middle of the intestinal region, and finally some other tubercles are placed symmetrically on the postero-lateral regions of the carapace. The whole surface is, moreover, covered with a short dense down, which, however, does not conceal the tubercles.

As in *N. rugosus*, the frontorbital or anterior margin of the carapace is comparatively very broad in proportion to the length, the latter being nearly as long as the distance between the external orbital angles. Unfortunately the left half of the frontal margin of our specimen is a little mutilated, so that I cannot describe exactly the form of the median tooth or teeth of the front; for, as in *N. rugosus*, a single small median tooth may perhaps also be found in this species in the middle of the front, or there may be two very small teeth. In every case the median tooth or teeth are much smaller and project much less forward than the next teeth; the latter are triangular, a little acute, and project about as much forward as the epistome, but not so much as the internal lobe of the under orbital margin. These teeth are separated by a rather deep emargination from the small, obtuse, external angles of the front (internal orbital angles), which project still less forward than the median tooth.

Immediately behind the external angles of the front, the smooth upper orbital margin presents a small short oblique crest and more outward two fissures; the external angle of the median lobe, situated between these two fissures, projects a little forward, though not forming a tooth. The under margin of the very large orbits also presents a fissure, and appears minutely denticulate between the latter and the large rounded internal lobe, which projects even more forward than the frontal teeth.

Whilst the left antero-lateral margin of the carapace is provided with nine teeth, the right presents only four between the external orbital angle and the terminal spine; these teeth evidently successively appear during the growth. The terminal spines are comparatively nearly as long as in *Nept. rugosus*, measuring about one third of the length of the cephalothorax; they are directed transversely outward and slightly forward, whereas in *N. rugosus* their direction is backward. The lateral angles of the posterior margin terminate each in a short acute spinule, directed outward and upward. The subhepatic regions of the carapace are a little hairy, and are fringed along the antero-lateral margins with longer hairs.

As regards the shape of the female abdomen, I refer to the figure of *Neptunus gladiator* published by de Haan (Fauna Japonica, pl. i. fig. 5), which wholly agrees with that of this species.

The somewhat hairy anterior legs are comparatively as short as in *Nept. rugosus*, and the arms extend but little beyond the antero-lateral margins of the carapace, and do not reach to the point of the great terminal spine. The anterior margin of the arms bears three acute, somewhat curved spines, the median one of which is found exactly on the middle of the margin; the proximal spine is seen immediately behind the median spine, but the distance of the distal spine from the latter is somewhat greater. The posterior margin of the arms is provided with two spines, a larger spine at the distal end and a somewhat shorter one close behind it. The wrist is armed at its internal angle with a large acute spine, and a smaller one is found on the middle of its posterior margin. The hand is armed with two spines, one on the outer margin of the upper surface, close to the articulation with the wrist, the second a little beyond the middle of the internal margin. A small dentiform tubercle, moreover, is found at the distal end of the outer margin, above the articulation of

the mobile finger. The outer surface of the hands presents two longitudinal ridges or costæ, and the rounded under margin is a little transversely rugose. The hands are unequal in size, the right being the larger. In both the immobile finger is a little shorter than the under margin of the palm. The fingers are costate and sulcate on their surface, and the tips are a little curved; the mobile finger of the larger chelipede is armed with a very strong tooth, directed obliquely backward at the base, and with some smaller teeth; and the index finger presents three broad, strongly depressed teeth at the base opposite to the strong basal tooth of the mobile finger, and seven much smaller unequal teeth, which gradually diminish in size towards the tip. On the index of the smaller hand these three depressed basal teeth are not found.

The ambulatory legs are closely similar to those of *Nept. rugosus*, except the last pair, which agree most with those of *Nept. hastatoides* (de Haan, Fauna Japon. pl. i. fig. 3). The meropodites are almost as long as broad, but the penultimate joint or propodite is much longer than broad, being similar to the propodite of *Nept. hastatoides*, according to the figure in the 'Fauna Japonica.' In *Nept. rugosus*, on the contrary, the meropodite is longer than broad, and the propodite is comparatively less elongate. Also the terminal joint is a little more elongate than in *N. rugosus*, agreeing in this respect more with *Nept. hastatoides*.

Dimensions of the specimen described :—

	millim.
Distance between the internal angles of the front	5 $\frac{3}{4}$
Distance between the external orbital angles. . . .	13 $\frac{3}{4}$
Distance between the tips of the terminal spines of the antero-lateral margins	31
Distance between the acute lateral angles of the posterior margin	9 $\frac{1}{2}$
Length of the carapace (the front included) . . .	14
Length of the under margin of the larger hand. .	14

Genus THALAMITA, Latr.

49. THALAMITA SAVIGNYI, A. Milne-Edw.

Thalamita admete, Audouin, *Egypte, Crustacés par Savigny*, pl. iv. fig. 4.

Thalamita Savignyi, Alph. Milne-Edwards, *Archives du Muséum Hist. Nat.* 1861, t. x. p. 357; de Man, *Notes from the Leyden Museum*, vol. ii. p. 180.

Seven rather young specimens (6 ♂, 1 ♀) were collected at Owen Island, the largest of which is 27 millim. broad and 16 millim. long.

It is very difficult to distinguish young specimens of this species from the young of the closely allied *Thalamita admete*, Herbst, as the principal characters by which they are distinguished from one another appear successively during growth. One of the chief characters is the more pronounced granulation of the carapace and of the chelipedes. The largest specimen already presents many characters proper to *Thal. Savignyi*, though not all. The upper surface of the cephalothorax is hairy, and the minutely granulated transverse lines are very prominent. The outer surface of the wrist of the anterior legs is armed with three spines (two in *T. admete*) and with elevated lines, between which it is hairy and granular. The outer surface of the hands bears two granulated crests, and between the lower crest and the upper margin the surface appears already granular and hairy; the rounded under margin of the hands is equally granular. The whole inner surface of the hands, on the contrary, and the elevated ridge near the lower margin, which proceeds along the immobile finger, are smooth, as in *T. admete*.

In the younger individuals this granulation is still less pronounced, so that it becomes very difficult to distinguish them from *Thal. admete*.

I may finally add that a young female, the cephalothorax of which is only 15½ millim. broad, is already provided with eggs. *Thal. Savignyi*, however, attains a breadth of 40 millim.

Thalamita Savignyi was first discovered in the Red Sea, but has since been recorded from New Caledonia by Milne-Edwards; the species has evidently a wide distribution. According to Heller, *Thal. admete* occurs at the Nicobar Islands.

50. THALAMITA INTEGRÆ, Dana.

Thalamita integra, Dana, *United States Explor. Expedition, Crustacea*, part i. p. 281, pl. xvii. fig. 6; *Alph. Milne-Edwards, l. c.* p. 358.

One young male was found at Elphinstone Island. This specimen, the carapace of which is only 15½ millim. broad and 10 millim. long, wholly agrees with the description published by Alph. Milne-Edwards.

Thalamita integra has been recorded from many islands of the Pacific Ocean by Dana, and from Mozambique by Hilgendorf.

The Leyden Museum contains specimens from the shores of Amboina and Timor.

51. *THALAMITA SIMA*, *M.-Edw.*

Thalamita sima, *Milne-Edwards*, *Hist. Nat. Crust.* t. i. p. 460.

Portunus (*Thalamita*) *arcuatus*, *de Haan*, *Fauna Japonica*, *Crust.* p. 43, pl. ii. fig. 2, and pl. xiii. fig. 1.

Thalamita sima, *Alph. Milne-Edwards*, *l. c.* p. 359.

Two very young individuals were collected at Owen Island. They closely resemble the two species of the genus *Thalamonyx* described by Prof. A. Milne-Edwards under the names of *Thalamonyx Danæ* and *T. gracilipes*; but in *Thalamita sima* the two median frontal lobes are less prominent, and the carapace is comparatively more enlarged. I think, however, the genus *Thalamonyx* may ultimately prove to be identical with *Thalamita*, so that it would be better to refer the two foregoing species to the latter genus.

Thalamita sima has been observed on the coasts of Coromandel, Java, Amboina, New Caledonia, China, and Japan. Its occurrence in the Red Sea is still doubtful, because it is probably represented there by the closely allied *Thalamita Poissoni*, Aud., which I have proved to be a distinct species (Notes from the Leyden Museum, vol. ii. p. 181).

52. *THALAMITA PRYMNA*, *Herbst.* (Pl. IV. figs. 5 & 6.)

Cancer prymna, *Herbst*, *op. cit.* pl. lvii. fig. 2.

Thalamita prymna, *Milne-Edwards*, *Hist. Nat. Crustacés*, t. i. p. 461.

Portunus (*Thalamita*) *prymna*, *de Haan*, *Fauna Japonica*, *Crustacea*, p. 43, pl. xii. fig. 2.

Thalamita prymna, *Alph. Milne-Edwards*, *l. c.* p. 360.

Seven specimens of different size were collected—three at Elphinstone Island, one at Owen Island, and three at King Island.

The largest specimen is a male, and its carapace is 53 millim. broad; the cephalothorax of an ova-bearing female is only 30 millim. broad.

In all these specimens the fourth antero-lateral tooth of the carapace is rudimentary. They present, however, some differences which are probably individual. Thus the upper surface of the cephalothorax and of the legs in the specimens from King Island is densely covered with short hairs, as in *Thalamita Danæ*; whereas these hairs are nearly wholly absent in the other in-

dividuals. In most examples the ridge on the basal joint of the outer antennæ is provided with a row of very short, small spines; in some specimens, however, as in the largest male from Elphinstone Island, these spines coalesce into a denticulated laminiiform crest, such as that described by Stimpson in the Japanese *Thalamita picta*; but in other individuals again this ridge is only armed with some acute granules of unequal size.

As the internal lobes of the upper orbital margin (outer frontal lobes) have probably a constant form in each species, it may be possible by them to distinguish the different species of this difficult genus. Thus these lobes are nearly straight in *Thalamita Danae*, Stimps., but somewhat arcuate in *T. prymna*.

In all these specimens, even in the small individuals from King Island and in the very young male from Elphinstone Island, the outer surface of the hand is armed with a granulated crest between the elevated ridge, near the inferior margin, which runs on to the immobile finger and the spines of the upper surface. They thus differ in this character from the Red-Sea individuals described by me some time ago under the name of *Thalamita prymna* (Notes from the Leyden Museum, vol. ii. 1880, p. 180); for in the latter the crest does not occur, when they are less than 45 millim. broad, but only gradually begins to appear when they have attained that size. The Mergui specimens and those from the Red Sea, therefore, are either varieties of one species, or they belong to different forms. In the latter case, I propose to distinguish the Red-Sea specimens as *Thalamita picta*, a species still very imperfectly known and insufficiently characterized. One character mentioned as distinctive between these two forms, viz. the occurrence of an acute prominent crest on the basal joint of the external antennæ, occurs sometimes in specimens of *Thal. prymna*, as I have described above.

Thalamita prymna is found in the Indian Ocean and the Malayan Archipelago (Padang, Timor, Halmahera). It has also been recorded from the coast of New Caledonia, the Loo-Choo Islands, and Japan.

The occurrence in the Red Sea of the typical *T. prymna*, as now characterized, is a little doubtful.

53. THALAMITA SPINIMANA, Dana. (Pl. IV. fig. 7.)

Thalamita spinimana, Dana, *United States Expl. Exp., Crust.* part i.

p. 283, pl. xvii. fig. 8; *Alph. Milne-Edwards, Archives du Muséum Hist. Nat.* 1861, t. x. p. 364, and *Nouv. Arch. du Muséum Hist. Nat.* 1873, t. ix. p. 165, pl. iv. fig. 5.

One female specimen was collected at Elphinstone Island.

The distance between the points of the third antero-lateral teeth, which we may call the breadth of the carapace, measures 61 millim., and the carapace is 39 millim. long. When comparing this specimen with the individuals described above as *Thal. prymna*, I observed the following differences:—The frontal lobes are more prominent in *T. spinimana*, and are separated from one another by much longer and broader fissures, and the internal lobes of the upper orbital margin are still more arcuated. The median frontal lobes are nearly quadrangular, the second tooth is a little broader and separated from the median by a fissure which appears shorter (less deep) than that by which the two median teeth are separated from one another. The third frontal tooth extends a little more forward than the others, and is also a little narrower; the outer frontal lobes (the internal lobes of the upper orbital margin) are still more arcuate and curved than those of *Thal. prymna*.

The ridge on the basal joint of the outer antennæ is armed with three or four black-pointed acute spines, of which the two internal are united at their base; they are partially seen between the internal arcuate lobes of the upper orbital margin and the third frontal tooth. The five antero-lateral teeth of the carapace are nearly equal and successively decrease in length, so that the fourth tooth is a little shorter than the third, but still slightly longer than the fifth.

The chelipedes are armed with more spines than those of *Thalamita prymna*. The anterior margin of the arms presents five spines, of which the proximal and distal ones are, however, very small. The wrist bears a strong acute spine at its internal angle, and the outer surface is armed with six spines of different sizes. The subequal hands are comparatively less high, and therefore appear more slender than in *Thal. prymna*; they are armed with eight or nine spines, arranged in two rows on the upper margin, and the outer surface presents the same longitudinal granulated crest which is found in the Mergui specimens of *T. prymna*, but which is absent in individuals from near Djedda in the Red Sea, which I propose to refer to *Thal. picta*. Between

this crest and the upper margin the outer surface of the hands is covered with some acute granules and spinules.†

The posterior margin of the penultimate joint of the natatory legs is provided with some short teeth, as in *T. prymna*. Kossmann is doubtless wrong in uniting into a single species all *Thalamitæ* with eight frontal lobes; but some species, however, may prove to be mere varieties of others.

As regards the figure of *Thal. spinimana*, published by Prof. A. Milne-Edwards, I may observe that the strange form of the front of this specimen is, without doubt, abnormal, similar abnormalities having been found by me also in other species of this genus.

Thalamita spinimana has been recorded from the Fiji Islands and from New Caledonia, the closely allied and probably identical *Thal. cæruleipes* having been found by the 'Novara' Expedition at the Nicobar Islands.

54. THALAMITA DANÆ, *Stimps.* (Pl. IV. figs. 8 & 9.)

Thalamita crenata, Dana, *Unit. States Expl. Exp.* i. p. 282, pl. xvii. fig. 7.

Thalamita Danæ, *Stimpson*, *l. c.* p. 37 (1858); *Alph. Milne-Edwards*, *Archives du Muséum Hist. Nat.* 1861, t. x. p. 366, pl. xxx. fig. 1.

Thalamita Stimpsoni, *Alph. Milne-Edwards*, *l. c.* p. 362, pl. xxxv. fig. 4.

Six specimens (2 ♂, 4 ♀) were collected—three at Owen Island, two at Elphinstone Island, and one at King Island.

Thalamita Danæ is, without doubt, a distinct species, distinguished by many constant and important characters. The internal lobes of the upper orbital margin are very depressed and nearly straight, differing much, therefore, from those of *T. prymna* and *T. spinimana*. The ridge on the basal joint of the outer antennæ is armed with a row of granules, which are never spinulose. The foregoing specimens wholly agree with the description and the figure published by Prof. A. Milne-Edwards. The upper surface of the carapace and of the legs is densely covered with short hairs. In most of the specimens the antero-lateral teeth are nearly equal, the fourth and the fifth being, however, a little smaller than the anterior. The fourth tooth in this species, however, appears to have a somewhat variable length, as has already been mentioned by Mr. Miers (*Ann. & Mag. Nat. Hist.* 5th ser. vol. v. 1880, p. 238), so I conclude that *Thal. Stimpsoni*, A. M.-Edw., is a variety of *Thal. Danæ*, differing only from it in the rudimentary

state of the fourth antero-lateral tooth, but entirely agreeing in all other characters.

The shape of the male abdomen is also characteristic of *T. Danæ*.

The Leyden Museum contains specimens of *Thalamita Danæ* from Amboina, Waigiou, Timor, Ceram, and Padang; and it has also been recorded from Auckland by Heller, from Hongkong and Java by Stimpson and Milne-Edwards, and from Mozambique by Hilgendorf.

55. THALAMITA CRENATA, *Latr.*

Portunus crenatus, *Latreille, Collection du Muséum.*

Thalamita crenata, *Rüppell, Krabben des Rothen Meeres*, 1830, p. 6, Taf. i. fig. 2; *Milne-Edwards, Hist. Nat. des Crustacés*, p. 461; *Stimpson, l. c.* p. 37; *Alph. Milne-Edwards, Archives du Muséum Hist. Nat.* 1861, t. x. p. 365, and *Nouv. Arch. du Muséum Hist. Nat.* 1873, t. ix. p. 166; *Hilgendorf, Monatsber. k. Akad. d. Wiss. Berlin*, 1878, p. 800.

One male specimen was collected at King Island.

The distance between the last antero-lateral teeth measures 60 millim. *Thalamita crenata* is sharply defined and distinguished from the preceding species by the absence of longitudinal crests and granulations on the outer and inner surfaces of the hands, which are very convex and nearly wholly smooth. As regards the shape of the cephalothorax, and more especially the shape of the frontal lobes, these two species, however, almost completely agree with one another.

Thalamita crenata is represented in the Leyden Museum by specimens from the Red Sea, from the island of Nossy-Faly, near Madagascar, from the Moluccas, Banda, Waigiou, Timor, and Macassar; also by specimens from the shores of Padang, Sumatra.

This species is, moreover, recorded from the coasts of China, the Loo-Choo Islands, Pondicherry, Java, the Nicobar Islands, and Mozambique. It seems, therefore, to be distributed throughout the whole Indo-Pacific Region from the Red Sea and Mozambique as far as the shores of China and the Marquesas group.

Genus GONIOSOMA, *Alph. M.-Edw.*

56. GONIOSOMA CRUCIFERUM, *Fabr.* (Pl. V. fig. 1.)

Portunus crucifer, *Fabricius, Suppl. Entom. Syst.* p. 364.

Thalamita crucifera, *Milne-Edwards, Hist. Nat. Crustacés*, i. p. 462.

Goniosoma cruciferum, *Alph. Milne-Edwards, Archives du Muséum Hist. Nat.* 1861, t. x. p. 371.

One male specimen was collected in the Mergui Archipelago. The distance between the points of the last antero-lateral teeth measures 71 millim., and the cephalothorax is 45 millim. long. The last antero-lateral tooth is directed transversely outward. I may also add that the posterior margin of the penultimate joint of the natatory legs bears two minute teeth.

Goniosoma cruciferum is found in the Indian Ocean, the Malayan Archipelago, and in the Chinese and Japanese seas, having been collected at Bombay, Pondicherry, Singapore, Sumatra, Java, Amboina, Port Jackson, the Philippines, Hongkong, and Japan.

57. *GONIOSOMA AFFINE*, *Dana*. (Pl. V. fig. 2.)

Charybdis affinis, *Dana, United States Expl. Exped., Crust.* part i. p. 286, pl. xvii. fig. 12.

Goniosoma affine, *Alph. Milne-Edwards, Archives du Muséum Hist. Nat.* 1861, t. x. p. 384.

Two fine adult specimens were collected in the Mergui Archipelago, a male and a somewhat larger ova-bearing female.

This species is still little known and very rare. As no examples are to be found in the large collections of the Leyden Museum, the following remarks may be desirable.

As Dana observes, this species is very similar to *Goniosoma cruciferum*, *Fabr.*; I will therefore compare it with the specimen of the latter which is in the collection.

The cephalothorax of the male is $23\frac{1}{4}$ millim. long and 37 millim. broad, that of the female is $26\frac{1}{2}$ millim. long and 43 millim. broad; the proportion of the breadth and the length of the carapace is therefore in this species quite equal to the same proportion in *G. cruciferum*. As regards the structure of the upper surface of the cephalothorax, both species agree very well with one another; but the antero-lateral regions are more depressed and even a little concave in *G. affine*. The whole upper surface is covered with a close down of very short hairs, and marked with the same minutely granulated transverse lines which are found in *G. cruciferum*.

The frontal teeth also closely resemble those of the latter species, but still more so those of *G. quadrimaculatum* (*A. Milne-Edwards, op. cit.* pl. xxxiv. fig. 3); they are scarcely acute, much

depressed, and the two median teeth are most prominent. The second teeth are directed somewhat obliquely outwards and separated from the third, which extends straight forwards, by a fissure deeper and longer than that by which the first and the second teeth are separated. The fourth teeth, or internal angles of the upper orbital margin, are directed somewhat obliquely outwards.

The first antero-lateral tooth has a very characteristic form; it is truncated and slightly excavated at its external margin, as in *G. cruciferum*; but it projects much more forwards than in that species, as will be seen by a comparison of figs. 1 & 2 Pl. V.; the second tooth is about the same size as the first, but is never larger than it, and it is rather acute, although without a dark point. The four posterior teeth are dark-pointed and acute; the third, fourth, and fifth teeth are directed straight forwards, but the last transversely outwards and slightly forwards. The last tooth is also a little longer than the anterior ones. Like the frontal teeth, those also of the antero-lateral margins are much depressed and flattened. The postero-lateral regions resemble those of *G. cruciferum*, and are concave.

The shape and the size of the internal lobe of the lower orbital margin are also characteristic of this species; for this lobe projects a little more forwards than the internal lobe of the upper margin of the orbits, while in *G. cruciferum* the latter projects more forwards than the former.

The subhepatic regions are hairy.

The anterior legs are quite similar to those of *G. cruciferum*, in the relative length of the arms and chelæ and in their form and armature. The anterior margin of the arms presents three spines; the wrist is armed with a long spine at the internal angle, and with three small acute spines at the outer surface. The outer surface of the hands of *G. affine* presents two longitudinal minutely granulated crests near the smooth convex under margin, and between the upper margin and the ridge which is continued upon the immobile finger; in *G. cruciferum* only one crest is found on this place. The external surface of the hand of *G. affine* has therefore three, whilst that of *G. cruciferum* has only two, longitudinal crests. The outer and upper surfaces of the hands of *G. affine* are covered with short hairs; whereas in this specimen of *G. cruciferum* these surfaces are perfectly

glabrous and smooth. The upper surface is armed with five spines, two along the inner margin (viz. one in the middle and one above the articulation of the mobile finger), and three along the external margin, viz. one at the articulation with the wrist, a second a little beyond the middle, and the third above the articulation of the mobile finger. The shape, structure, and armature of the fingers are quite similar in both species.

The ambulatory and the natatory legs wholly resemble those of *G. cruciferum*, and consequently the meropodites of the natatory legs are very broad and sulcate, the proportion of their length and breadth being as 6:4, and the grooves on their upper (outer) surface are hairy. The penultimate joint presents the same elongated form, and its posterior margin has only traces of two or three minute teeth. As regards the shape of the male abdomen, both species perfectly agree with one another.

G. affine may therefore be distinguished from *G. cruciferum* (1) by its smaller size, (2) by the different shape and form of the first antero-lateral tooth, (3) by the internal suborbital lobe being much more prominent, (4) by the presence of three longitudinal crests on the outer surface of the hands.

Young specimens of *G. cruciferum* have, however, still to be examined in order to ascertain whether they present the same characters as the adult.

G. affine, Dana, is a rare species, which has hitherto been recorded only from the seas of Singapore.

Besides the well-known *G. cruciferum*, Fabr., and *G. natator*, Herbst, there is still a fourth species of *Goniosoma*, in which the first antero-lateral tooth of the carapace is truncated and slightly excavated, namely, *G. miles*, de Haan, from the Japanese seas. This species, however, differs from *G. affine* (1) in its larger size, (2) by its narrower cephalothorax, (3) by its more acute frontal teeth, and especially (4) by its more elongated anterior legs, the merus-joints of which are armed with four strong teeth anteriorly, and by its hands having their outer and under surfaces covered with minute granules and squamose granular lines.

58. GONIOSOMA MERGUIENSE, n. sp. (Pl. V. figs. 3 & 4.)

? Synon.: *Goniosoma spiniferum*, Miers, *Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. 'Alert,'* 1884, p. 233, pl. xxiii. fig. C.

A thorough revision of the genus *Goniosoma* is much needed,

not only because the typical specimens of Fabricius and Herbst have never been examined by later carcinologists, but also because the numerous species are often only distinguished by very slight differences. I therefore consulted Prof. Milne-Edwards regarding this species, and I was informed by him that it is closely allied to *G. quadrimaculatum*, A. M.-Edw.* It differs, however, from *G. quadrimaculatum* (1) by the form of the antero-lateral teeth, the last of which is distinctly longer than the preceding, not only in young specimens but even in the adult; and (2) by the carpopodites of the natatory legs being armed with an acute spine, and by other characters.

This species is probably identical with *G. spiniferum*, Miers, from North-eastern Australia, which was, without doubt, established upon a young specimen. In the latter the outer surface of the carpopodites of the anterior legs is armed with only two spinules, and the posterior margin of the penultimate joint of the natatory legs is not denticulated; whereas in equally young specimens, and indeed in all the twenty specimens of the Mergui form, there are three spinules, and denticulations are distinctly present. I therefore prefer to describe the Mergui crab as a new species, but a renewed examination of the species from Port Molle may perhaps prove its identity with *G. merguense*.

I may further add that, according to Milne-Edwards, *G. acutum* from Japan is a distinct species.

The Collection contains a fine series of twenty specimens of various sizes of the new species, nine of which were found at

* A close examination of the typical specimen of Fabricius's *Portunus lucifer* (Suppl. Entom. p. 364) led me to the conclusion that it is identical with *Goniosoma quadrimaculatum*, A. M.-Edw. I also received from Prof. Möbius the type specimen of Fabricius's *Portunus annulatus*, which is much smaller than the type of *P. lucifer*. I am much inclined to regard *P. annulatus* as only a younger specimen of *P. lucifer*, for I scarcely find any other differences than that the cephalothorax of the latter is a little more enlarged than in the former, and that the antero-lateral spines and those of the anterior legs are less acute than in *P. annulatus*, characters which probably may be due to the greater age of the type of *P. lucifer*. The carpopodite of the natatory legs in *P. lucifer*, as in *P. annulatus*, is quite unarmed, but the propodite is denticulated along its posterior margin. In both species the last antero-lateral tooth is the smallest.

I may further add that an examination of the typical specimen of the *Goniosoma* described by Heller as *G. orientale* (Novara Reise, p. 29, t. iii. fig. 3), has proved it to be identical with *P. annulatus*, Fabr. The fine violet rings on the legs are still visible, almost as distinctly as in the dried specimen described by Fabricius. *G. Hellerii*, A. M.-Edw. (1867), is probably a different form.

King Island Bay, and five at Elphinstone Island ; but the exact localities of the others are not recorded. The largest specimen is 63 millim. broad, the smallest only 11 millim. ; and the others are of intermediate size.

In its general outer appearance this species resembles closely *G. quadrimaculatum*, A. M.-Edw., = *G. luciferum*, Fabr., the cephalothorax being considerably enlarged. In the largest specimen, which is 63 millim. broad, the distance between the tips of the last antero-lateral teeth is in proportion to the length of the cephalothorax as 21 : 13. The rather depressed upper surface of the cephalothorax appears minutely punctate when it is examined under a lens ; and it is covered with a short pubescence, especially anteriorly and on the antero-lateral regions, but in many specimens this is worn off, as *e. g.* in the largest individual. The upper surface is marked anteriorly with the usual minutely granulated, slightly prominent, transverse lines. The posterior line which unites the last antero-lateral teeth with one another has a somewhat sinuous course, and it is interrupted, on each side of the mesogastric area, by the scarcely distinct gastrobranchial groove ; before this line the middle of the protogastric region is marked with another non-interrupted transverse line, which is as broad as the front ; and before this line two pairs of transverse lines are found on the epigastric area, the anterior pair being very small. No transverse lines are found behind the long line which unites the two last antero-lateral teeth.

The front, *i. e.* the distance between the internal orbital angles, measures precisely a third of the distance between the tips of the last antero-lateral teeth. The large series of individuals in the Collection has enabled me to observe a remarkable fact, namely, that the frontal teeth are blunt and rounded in very young specimens, that they successively appear more pointed in older ones, and that they are finally more or less acute and sharp in adult individuals. Thus in the smallest specimen of the Collection, only 11 millim. broad, the two first or median teeth are blunt, rounded, and separated from one another by a minute incision ; the second, somewhat broader, teeth are also broadly rounded, slightly directed outwards, and separated from the first by a small triangular hiatus ; the third teeth are straight, also blunt, though narrower than the first, and separated from the second by a narrow, though somewhat longer fissure ; the fourth frontal teeth or internal orbital angles are triangular, and also

rather obtuse. In specimens which are twice as large and 22 millim. broad, the frontal teeth still fully resemble those of the youngest specimen. In larger individuals the frontal teeth appear gradually less rounded, more triangular, and pointed, and separated from one another by larger and deeper fissures, though the two median teeth are changing their form a little more slowly than the others, appearing obtuse, whereas the other teeth are already pointed and acute. In a specimen 50 millim. broad the two median teeth are blunt, the second teeth triangular, though still obtuse; the third and the fourth teeth, however, are very acute, especially the third. In the largest specimen in the Collection, which is 63 millim. broad, all the frontal teeth are sharp and acute, those of the first pair being even triangular and a little pointed. The frontal teeth are flattened and depressed, and the median teeth are slightly more prominent than the others. The front appears to me to be a little more prominent than in *G. spiniferum*; but as the figure of that species is a double enlargement made from a young and small specimen, the drawing is perhaps somewhat inexact.

The orbits are of the usual size, and their upper margin presents two narrow linear fissures; the internal lobe of the inferior margin of the orbits is triangular and acute, and projects scarcely as much forwards as the internal angle of the upper margin. The inferior orbital margin is also marked with a fissure or hiatus.

The antero-lateral margins are armed with six acute teeth, including the external orbital angles; the tips of all the teeth are dark-coloured. The first two teeth are of equal size; the third is a little larger, as in *G. annulatum*, Fabr.; the fourth is a little smaller than the third; the fifth is a little smaller than the fourth; and the sixth or last tooth is distinctly longer than the preceding, being directed transversely outwards and slightly forwards*. In the younger specimens the last antero-lateral tooth is almost twice as long as the fifth, while in the largest specimen it

* Though the first two antero-lateral teeth are slightly smaller than the third in this species, as in *G. annulatum*, Fabr., *G. luciferum*, Fabr., and *G. japonicum*, de Haan, they are, however, about as large as the fifth; in *G. orientale*, Dana = *dubium*, Hoffm., and in *G. acutifrons*, de Man, on the contrary, the second antero-lateral tooth is rudimentary, being in the last-mentioned species even scarcely perceptible.

is still distinctly longer than the fifth. The postero-lateral margins are rather concave.

The external antennæ are long, and measure two thirds of the length of the cephalothorax; their basal joint is armed with a minutely granulated, rounded, and little prominent crest. In *G. acutum*, A. M.-Edw., a species inhabiting the Japanese seas, and closely allied to our species, this crest is armed with two spines.

The sternum and the abdomen are minutely punctate, but are quite smooth and glabrous. In its general shape the male abdomen resembles that of *G. quadrimaculatum* (Archives du Muséum, tom. x. pl. xxxiv. fig. 3 a). The terminal joint is triangular and equilateral; the length of the penultimate joint is scarcely shorter than the breadth of its posterior margin, and the lateral margins of this joint are a little rounded and convex on their anterior half. In *G. luciferum* = *G. quadrimaculatum* the penultimate joint is a little shorter, and it therefore appears slightly more enlarged. As usual, the lateral margins of the female abdomen are fringed with hairs.

The anterior legs are rather short, extending with their distal half beyond the lateral margins. The anterior margin is armed with four spines, including a small spinule at the distal end (in the larger chelipede of the largest specimen, a fifth accessory spine is found between the two proximal spines, but this spine is certainly an abnormality). In many specimens, a small spinule is found at the distal end of the under margin inserted on the tuberculiform prominence which is there seen. The rounded posterior margin is slightly granular, but the rest of the arms is smooth. The wrist is armed with a long strong spine at its internal angle, and with three acute spinules on its outer surface; the ridges on the outer surface, terminating in these spinules, are minutely granular.

The hands are comparatively less swollen than those of *G. annulatum*. As regards the proportion of the length of the fingers to that of the palm, both species agree with one another. The larger hand of the largest specimen is scarcely more than three times as long as it is high at the base of the fingers; the smaller hand is comparatively lower, and appears therefore slightly more elongated. The upper surface is armed with five spines arranged, as usual, in two rows; two are found on the

internal margin, and three in the external row, the proximal of the latter being found at the articulation with the wrist. The distal spines are situated above the articulation of the mobile finger. The outer surface of the hands presents three longitudinal parallel ridges, one below and near the under margin, and continued upon the immobile finger, the second on the middle of the outer surface, and the third, proceeding parallel to the second, from the proximal spine of the external row of the upper margin up to the middle of the palm. In the adult specimen these ridges are smooth, in the younger individuals often minutely granular. The outer surface of the palm, its convex under surface, and the inner surface, which also presents a more or less distinctly indicated longitudinal ridge on the middle, are smooth; but the upper surface of the palm is minutely granular; the dorsal ridges on the upper surface, which terminate in the spines, are also somewhat granular. On the hand of the smaller chelipede of the adult specimen these granules are less distinct. The fingers are similar to those of *G. annulatum*, Fabr.

The three succeeding pairs of legs are a little more slender than those of *G. annulatum*, Fabr., the joints being slightly more elongated. Thus the propodites of the legs of the third, or middle, pair are thrice as long as broad; in *G. annulatum*, however, they are scarcely more than twice. The dactylopodites are also more slender.

The natatory legs are similar to those of *G. luciferum* = *G. quadrimaculatum*. The merus-joint is about twice as long as broad, slightly longitudinally grooved near the anterior and again near the posterior margin, which is armed near the distal end with a strong spine. The carpopodite is armed, as in *G. spiniferum*, Miers, at the posterior margin of its under surface with an acute backwardly directed spine. The penultimate joint or propodite in all the specimens is denticulated along its posterior margin, having 7-9 acute spinules. The flattened terminal joint has a small spinule at its distal extremity.

Like the cephalothorax, the legs are also covered with a close pubescence, while the more prominent parts, such as the ridges and spines, are glabrous; in many examples, however, this pubescence has been worn off.

Dimensions of the largest specimen :—

	millim.
Length of the cephalothorax (without the abdomen).	39
Distance between the external orbital angles	36½
Distance between the tips of the last antero-lateral teeth, being the breadth of the cephalothorax . .	63
Distance between the tips of the external frontal teeth, <i>i. e.</i> between the internal orbital angles = breadth of the front	21
Length of the penultimate joint of the male abdomen.	5½
Breadth of the posterior margin of this joint	6
Length of the larger hand (the fingers included) . .	44½
Length of the fingers	21
Height of the hand at the base of the fingers	14

A female of a species of *Goniosoma* from Amboina, preserved in the Leyden Museum, and referred by me some years ago to *G. annulatum*, Fabr., agrees completely with the Mergui specimens, except that the last antero-lateral tooth is only as long as the fifth and not longer. I regard this form as a local variety.

G. luciferum, Fabr. = *G. quadrimaculatum*, A. M.-Edw., *G. annulatum*, Fabr., and *G. japonicum*, de Haan, are all closely allied to *G. merguiense*. They may be distinguished from it at first sight by the absence of the spine on the carpopodite of the natatory legs. In *G. japonicum* the long crests of the hands are always distinctly granular; the penultimate joint of the male abdomen is differently formed; the penultimate joint of the natatory legs is unarmed; the meropodites of the natatory legs are more enlarged; and the last antero-lateral tooth is the smallest of all.

Subtribe *Catometopa*.

Genus *EUCRATE*, de Haan.

Mr. Miers supposes that the genera *Pseudorhombila*, M.-Edw., *Carcinoplax*, M.-Edw., *Eucrate*, de Haan, and *Pilumnoplax*, Stimps., will prove to be identical, when they come to be submitted to a thorough revision. In my opinion, however, the genus *Eucrate*, de Haan, must be retained; for this genus is a very natural one, distinguished not only by its entire physiognomy, but also by the structure of the external antennæ. In

the genus *Eucrate* the internal orbital hiatus is occupied by a process at the base of the antennæ, so that the flagellum is quite excluded from the orbital cavity. In the genus *Carcinoplax*, on the contrary, at least in the two species which I have studied, viz. *C. setosus* and *C. integer*, the internal orbital hiatus is occupied by the base of the antennæ itself, as in *Pilumnus*, so that the flagellum is not excluded from the orbits. According to the descriptions of Milne-Edwards and Stimpson, the genera *Pseudorhombila* and *Pilumnoplax* seem to agree with *Carcinoplax* in the flagella of their external antennæ not being excluded from the orbits; whereas the genus *Heteroplax*, Stimps., agrees with *Eucrate* in the character of its external antennæ.

59. EUCRATE AFFINIS, *Haswell*. (Pl. V. figs. 5-7.)

Eucrate affinis, *Haswell*, *Catalogue of the Australian Stalk- and Sessile-eyed Crustacea*, 1882, p. 86.

? *Pilumnoplax sulcatifrons*, *Stimpson*, *Proc. Acad. Nat. Scienc. Philadelphia*, 1858, p. 93.

Four fine specimens (three ♂, one ♀) of a crustacean collected at King Island Bay, I refer, although with some hesitation, to the rare species *E. affinis*, *Haswell*. These specimens not only belong to the genus *Eucrate*, de Haan, but in many characters even present a striking resemblance to the typical representative of this genus, *E. crenata* from Japan. Besides their smaller size, they may be distinguished from the latter species by the more depressed cephalothorax, and by the ridge-like elevations with which the upper surface is covered.

I refer these specimens to *Haswell's E. affinis* from the Australian coast, although his description of it does not completely agree with them. Thus *Haswell* does not describe the anterior margin of the front as being transversely sulcated; and according to the same author, the wrist is very hairy externally, whereas in the Mergui specimens it is only hairy anteriorly towards and near the articulation with the hand. In *Haswell's* specimens, also, the hands presented a longitudinal ridge close to the inferior border; but in the Mergui specimens an impressed longitudinal line is found only on the outer surface of the immobile finger close to the inferior border, the palm being quite smooth.

The following is a full description of the four specimens. The cephalothorax closely resembles that of *E. crenata*, the proportion of the breadth and the length being precisely the

same; but it is a little less convex, and the antero-lateral margins are comparatively a little longer than in the Japanese species. In the form and the structure of the front and of the orbits, both species are alike. The front is slightly declivous, straight, and divided by a small median triangular notch into two truncated lobes; the anterior margin is distinctly transversely sulcated, and the two lobes are a little prominent in the middle; so that the front is perfectly similar to that of *E. crenata*. The internal angle of the upper orbital margin is described by Haswell as being acute; but in our specimens it resembles *E. crenata* only when the carapace is viewed from above; when, however, the front orbital region is looked at anteriorly, the internal orbital angle appears obtuse, though transversely carinated. As in *Heteroplax*, the internal orbital hiatus is occupied by a process of the base of the antennæ, so that the flagellum is excluded from the orbital cavity; the flagellum therefore appears in the hiatus between the internal orbital angle and the front, when the carapace is looked at from above. The flagellum is a little longer than half the length of the cephalothorax. The upper margin of the somewhat oblique orbits presents two fissures, one about the middle, and the other near the external angle; the inferior orbital margin also presents a small hiatus near the external orbital angle. The internal lobe of the infraorbital margin is dentiform, and projects a little more forwards than the internal angle of the upper margin. It is separated by a small emargination from a second, though smaller and less prominent lobe of the infraorbital margin, situated on its interior half.

The antero-lateral margins are much shorter than the postero-lateral, and are armed with four teeth, including the external orbital angle. These teeth are rather acute and nearly equal, the third being, however, a little longer and slightly more prominent than the others, and the fourth being the smallest of all; they are all more or less distinctly carinate above. The antero-lateral margins are little oblique, so that the carapace is rather narrow. The external elevated margin of the last antero-lateral tooth extends backwards for a short distance, thus constituting the postero-lateral margin; but it soon disappears, so that the postero-lateral margin becomes undefined. A little more inwards, however, on each side of the upper surface of the carapace, a ridge-like, longitudinal, somewhat rugose elevation is found,

running obliquely forwards from the posterior margin of the cephalothorax, and parallel to the postero-lateral margin, almost to the level of the last antero-lateral tooth.

A little behind the frontal margin two slight transverse elevated lines are observed on the upper surface of the cephalothorax between the orbits; these epigastric ridges are separated from one another by a faint mesial frontal furrow, which is bifurcated behind as usual. Two other transverse ridge-like elevations are found on each antero-lateral region, the anterior of which is situated at the base of the third antero-lateral tooth; whereas the posterior, parallel to the anterior, is found at the base of the fourth antero-lateral tooth. The anterior of these transverse ridges and the transverse epigastric ridges are united on each side by a ridge-like elevation which runs parallel to the upper orbital margin. The cervical suture which separates the gastric from the cardiac region is very faintly marked. An impressed line proceeds close to and parallel to the posterior margin of the cephalothorax. The rest of the upper surface of the cephalothorax appears quite smooth and glabrous, slightly convex anteriorly and flattened posteriorly.

In *Eucrate affinis* the endostome is more distinctly longitudinally ridged on each side than in *E. crenata*; but in the form of the epistome and of the anterior margin of the buccal cavity, both species resemble one another. The male abdomen is seven-jointed, scarcely narrower towards the base than the contiguous part of the sternum; the third joint is the most enlarged; and the remaining terminal part is very narrow, the joints gradually increasing in length and decreasing in breadth, so that the terminal joint is the longest of all. I have only a female specimen of *E. crenata* before me, and I am therefore unable to decide whether both species agree with one another as regards the form of the male abdomen; but the female abdomen presents precisely the same form in both species.

The anterior legs are subequal, the right being in all the specimens a little larger than the left; they have the same form and size both in the male and in the female. The anterior as well as the ambulatory legs are closely similar to those of *E. crenata*.

The upper margin of the arms is armed with a strong tooth near its distal end, which is "separated distally by a transverse groove from a second, lower, transverse elevation," as Haswell rightly

observes. The wrist, armed with a small tooth at its internal angle, is smooth and glabrous on its convex upper surface, except towards the distal and anterior margin, especially towards that part which lies between the internal tooth and the articulation of the hand, where it is densely hairy. In *E. crenata* a larger portion of the upper surface is hairy; and in Haswell's specimens of *E. affinis* the wrist is described as being very hairy externally; so I suppose the *whole* outer surface in them was hairy. The hands are quite smooth, convex, and glabrous, and closely resemble those of *E. crenata*; the fingers are nearly as long as the palm, and are also smooth, the mobile finger presenting a longitudinal punctated line on its outer surface, whereas the index is marked with a longitudinal impressed line on the outer surface close to the inferior border. The inner surface of the palm is also convex and almost glabrous, being only a little hairy near the articulation with the wrist. The fingers have pointed crossed tips, and their inner margins are denticulate, the mobile finger presenting two somewhat stronger teeth at the base, whereas the index is armed with some stronger teeth at the middle of its inner margin. The ambulatory legs are closely similar to those of *E. crenata*, the first three pairs being nearly equally long, whereas the last pair is shorter. The three terminal joints are slightly hairy along their anterior and posterior margins. The dactylopodites are depressed, and, like the propodites, they are longitudinally sulcate on their upper surface. The dactylopodites of the last pair are slightly curved upward towards their extremity, and are a little shorter than the propodites, being similar to those of *E. crenata*.

Dimensions:—

	♂. millim.	♀. millim.
Length of the cephalothorax	11 $\frac{1}{4}$	12 $\frac{1}{2}$
Breadth of the cephalothorax (distance between the third antero-lateral teeth).	14 $\frac{1}{2}$	16

Eucrate affinis, Haswell, has been recorded from the Australian coast (Port Denison), where it was collected in 20 fathoms.

Pilumnoplax sulcatifrons, Stimps., is closely allied, or perhaps even identical, with this species. Indeed, when comparing these specimens with the description given by the American naturalist, I was struck by the great conformity between them.

Stimpson, however, says in his description that the antennæ are similar to those of *Pilumnus*; but perhaps he has mistaken their real structure, as his specimens were very small. The species lately described and figured by Miers under the name of *Pseudorhombila sulcatifrons*, var. *australiensis*, is also closely allied to this species; but it seems to differ by its longer and more slender dactylopodites, by the non-emarginate front, and the complete absence of hairs on the wrist (Miers, *Zoology of the Voyage of H.M.S. 'Alert,'* Crustacea, p. 242, pl. xxiv. fig. C).

Should *Pilumnoplax sulcatifrons*, Stimps., prove to be identical with *Eucrate affinis*, Hasw., I should then be inclined to retain the latter name, although of later date than the former, because in both species the anterior margin of the front is transversely sulcate.

GENUS CARCINOPLAX, *M.-Edw.*

60. CARCINOPLAX SETOSUS, *A. M.-Edw.*

Carcinoplax setosus, *Alph. Milne-Edwards, Nouv. Arch. du Muséum Hist. Nat.* t. ix. p. 267, pl. xii. fig. 2.

Three specimens (one ♂, two ♀) were collected at Owen Island.

The cephalothorax of the largest individual is $7\frac{1}{2}$ millim. broad.

This small species has been found on the shores of New Caledonia and of the island of Banda (*Leyden Museum*).

61. CARCINOPLAX INTEGER, *Miers.*

Carcinoplax integra, *Miers, Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. 'Alert,'* 1884, p. 543, pl. xlviii. fig. C.

Three specimens were collected at Elphinstone Island, two males and one female.

I am enabled to add some additional remarks to Miers's description of this species, as the Mergui specimens are of a much larger size than those he described. The cephalothorax of the largest specimen (♂) is $10\frac{1}{4}$ millim. broad and $7\frac{3}{4}$ millim. long; unfortunately this specimen has lost both chelipedes. The specimen which was described by Miers was only half that size. The front is much deflexed, and divided by a small median triangular incision into two lobes; the margins of these lobes are nearly straight

being only very faintly emarginate towards their lateral angles, *i. e.* the internal orbital angles; in *Carcinoplax setosus* they are more distinctly separated from the latter by a small lateral cleft. The inferior margin of the orbits presents a trace of a fissure or a very indistinct hiatus close to their external angle. As in *C. setosus*, the endostome is faintly ridged; but in so young a specimen as that which was collected by H.M.S. 'Alert' the ridges might easily be overlooked. The merus-joint of the external maxillipeds has been very well figured by Mr. Miers, but inaccurately described; the anterior half of the internal margin is slightly excavated, and the antero-external angle is rounded.

The male abdomen presents seven distinct joints, and the penultimate joint is a little broader than long. The fingers have pointed, crossing, naked tips, and are slightly longitudinally sulcate. I may observe that the dactylopodites of the last pair of ambulatory legs are slightly curved upward towards their corneous claw, both in this species and in *C. setosus*, the same way as in the genus *Pilumnoplax*.

Carcinoplax integer has hitherto been recorded only from the Seychelles.

Genus TELPHUSA, Latr.

62. TELPHUSA STOLICZKANA, Wood-Mason.

(Compared with the typical specimens of *Telphusa indica*, Latr., and *T. Larnaudii*, A. M.-Edw.)

Telphusa stoliczkana, Wood-Mason, *On Indian and Malayan Telphusidæ*, *Journ. Asiatic Society of Bengal*, vol. xl. pt. 2, 1871, p. 199, pl. xii. figs. 8-12.

The Collection contains a fine series of nine specimens, five of which were collected at Thaing, and four at Yimiki, both in King Island.

This species has been very well described and figured by Mr. Wood-Mason, so that I have little to add. It may easily be recognized by the enlarged and depressed cephalothorax, the rather shallow cervical suture, the straight non-interrupted postfrontal crest which unites the two more or less prominent epibranchial teeth with one another, and by the somewhat granulated front, the anterior margin of which is deeply emarginate.

Prof. Alph. Milne-Edwards kindly compared for me a specimen,

which I had sent to him, with the typical specimens of Latreille's *T. indica*, which is closely allied to this species. According to Prof. Milne-Edwards, *T. Stoliczkana* differs from *T. indica* by the more dilated branchial regions, by the less profound gastro-branchial groove, by the more sharply defined protogastric (epigastric) lobes, and by the deeply emarginate frontal margin, which in *T. indica* is entire.

T. Stoliczkana is also allied to *T. Larnaudii*, Alph. Milne-Edw., a species which not only inhabits Siam but also the island of Sumatra, as I indicated some years ago in my Note on the Crustacea collected by the Dutch Sumatra Expedition (de Man, Crustacea, in P. J. Veth's 'Midden-Sumatra,' Leiden, 1880, iv. pt. xi. p. 2, pl. i.). Prof. Milne-Edwards having sent me a typical specimen of *T. Larnaudii* from Siam, I am enabled to describe the characters by which this species may be distinguished from *T. Stoliczkana*. In *T. Larnaudii* the epibranchial teeth are situated closer to the external orbital angles, so that the distance between the epibranchial teeth and the external orbital angles is comparatively shorter. It is in consequence of this difference that both species present an entirely different outer appearance. The front is more granular in *T. Larnaudii*, and less profoundly emarginate; the postfrontal crest, of which at least the external portions are straight and entire in *T. Stoliczkana*, proceeding continuously and uninterruptedly to the epibranchial teeth, is in *T. Larnaudii* much more interrupted not only in its inner or epigastric, but also in its external portions, which are not prolonged in an uninterrupted line to the epibranchial teeth. In my figure of the Sumatran *T. Larnaudii* this latter character has unfortunately not been correctly represented. In *T. Larnaudii* the antero-lateral and epigastric regions are more transversely rugose, and the inflected subhepatic and pterygostomial regions, which are smooth or nearly smooth in *T. Stoliczkana*, are covered in the former with numerous oblique and transverse rugose lines.

The largest specimen of *T. Stoliczkana* in the Collection, a male, is 52 millim. broad and 39 millim. long (the abdomen not included), the proportion of the length to the breadth being as 3:4, the same as in Wood-Mason's typical specimens.

T. Stoliczkana was discovered at Penang, and is a species proper to the islands which are situated near the western coast of the Malayan peninsula.

63. *TELPHUSA CALLIANIRA*, n. sp. (Pl. VI. figs. 1-3.)

(Compared with the type specimen of *Telphusa grapsoides*, White, and with the type specimens of *T. hydrodromus*, Herbst, *T. Jagori*, v. Mart., and *T. subquadrata*, Gerst., which are preserved respectively in the British Museum and in the Museum at Berlin.)

Fifteen specimens (eight ♂, seven ♀) of this pretty little *Telphusa* are in the Collection; thirteen of which were collected in the mangrove-swamps of Kisseraing Island, the two others in Sullivan Island.

This new species is closely allied to the previous species, and, I presume, also to *T. angustifrons*, A. M.-Edw., a species inhabiting Cape York. It belongs to the group in which the postfrontal ridge is interrupted not only in the middle by the median frontal furrow, but also on each side of the latter in the middle, and again near the lateral margins; so that the two median portions are more advanced than, and wholly separated from, the lateral, which do not reach the epibranchial tooth.

The cephalothorax is rather narrow, though broader than long. The proportion of the distance between the epibranchial teeth to the length of the cephalothorax (the abdomen being excluded) is about 16:14, both in the male and in the female. The cephalothorax presents its maximum of breadth immediately behind the epibranchial teeth; so that the anterior half of the lateral margins is slightly convex outwards and the posterior faintly concave. The upper surface of the carapace is rather depressed and flattened; anteriorly it is somewhat convex, and the front is almost vertically deflexed downwards. In the female the upper surface is a little more convex.

The front is of moderate breadth; the breadth of its anterior margin is in proportion to the distance of the epibranchial teeth almost as 6 to 16, so that the front measures a little more than a third of the distance of the epibranchial teeth. The anterior margin of the front, which is nearly straight, presents only a very slight median sinus, and is almost at a right angle with the upper margins of the orbits. In *T. hydrodromus*, Herbst, however (a species inhabiting the island of Ceylon, and closely allied to our *T. Callianira*), these angles are very oblique and rounded, according to Dr. Hilgendorf, who kindly compared for me this species with all the *Telphusæ* of the Zoological Museum of Berlin. Dr. Hilgendorf

informed me then that the Mergui *Telphusa* was not represented in the Museum*.

The upper surface of the cephalothorax is minutely punctate. The front is somewhat granular between the orbits. Besides the median frontal furrow, which divides as usual the postfrontal ridge, and the arcuate median portion of the cervical suture, which separates the gastric from the cardiac region, no other inter-regional grooves are found on the upper surface; nevertheless on each side of the gastric region the upper surface is somewhat impressed in an oblique direction, from the epibranchial tooth towards the mesogastric region; by these impressions the gastric region is separated from the epibranchial portions of the upper surface. The branchial regions are hardly at all inflated. The postfrontal ridge is distinctly indicated and interrupted, not only by the median frontal furrow, but also at each side of the latter, in the middle, and near the lateral margins. The two median or internal portions, which are somewhat transversely rugose anteriorly, and which are separated from one another by the median frontal furrow, are a little more advanced than the lateral portions, from which they are completely separated. These lateral ridges are scarcely broader than the median, and are nearly straight and directed towards the epibranchial teeth, whereas the median portions are slightly arcuate. The lateral portions, however, are not continued as far as the epibranchial teeth, but are interrupted at some distance from them. Immediately behind that interruption, on each side of the upper surface, a short oblique rugose line is observed. The orbital margins are smooth and entire; the flattened external angles of the orbits are nearly right angles, and are therefore scarcely acute. The external margin of the cephalothorax, between the external angle of the orbits and the epibranchial tooth, is smooth and entire. The epibranchial tooth is acute and prominent; and the lateral margins of the cephalothorax behind it are marked with many oblique piliferous lines. I may further add that the gastric region appears sometimes minutely rugose, immediately behind the post-

* Gerstäcker and Hilgendorf suppose that *Telphusa hydrodromus*, Herbst, is identical with *T. grapsoides*, White. To me, however, the latter appears to be distinct from the former species. In *T. grapsoides* the distance between the epibranchial teeth is almost exactly the length of the cephalothorax, whereas in *T. hydrodromus* the breadth is in proportion to the length as 16:13.

frontal ridge, when examined under a lens. The convex pterygostomial regions are slightly granular, and the inflected sides of the cephalothorax are marked with some oblique elevated lines. The outer surface of the ischium-joint of the external maxillipeds presents an impressed longitudinal line, to which Mr. Hilgendorf first directed attention as a character serving to distinguish the species of this genus. In *T. Callianira* this line is situated about the middle of the joint, and is directed a little obliquely, so that it almost coincides with a diagonal uniting the internal angle of the anterior margin of the joint with the external angle of the posterior margin. The outer surface of this joint is minutely punctate. In *T. hydrodromus* this impressed line is situated much closer to the internal margin of the joint.

The outer surface of the sternum and of the abdomen is faintly punctate. The male abdomen has a characteristic form. It gradually and rather rapidly narrows towards the posterior margin of the penultimate joint; the latter is nearly quadrate, and as long as broad at the posterior margin, its lateral margins being nearly straight. The terminal joint is distinctly longer than broad at its base; it is rounded at the tip, and the lateral margins are slightly concave immediately behind the middle of the joint, which therefore presents a characteristic form. In *T. hydrodromus* the penultimate joint is broader than long.

T. Callianira belongs to the small species of the genus; in the adult ova-bearing female specimen the distance between the epibranchial teeth measures only 15 millim.

The anterior legs are very unequal, especially in the male; and the larger chelipede is found either on the right or on the left side. The outer surface and the upper margin of the arm are somewhat transversely rugose, and the anterior margin is somewhat granular. The upper surface of the wrist is slightly rugose towards the external and internal margins; the latter is armed at the internal angle with an acute tooth. The larger hand is about as long (the fingers included) as the breadth of the cephalothorax, and twice as long as high (the fingers included): The palm itself is but little longer than high at the base of the fingers; its outer surface is convex, smooth, and slightly punctate, like the inner surface, and the upper and under margins are rounded. The lower finger is slightly deflexed, and the mobile finger is slightly arcuated, leaving a hiatus when closed; both fingers are

feebly toothed, the teeth of the index being the larger. The mobile finger is nowhere longitudinally grooved, but appears minutely granular when examined under a lens; the index presents a slight longitudinal groove on its outer surface, and the pointed tips cross one another.

The smaller hand of the male measures only two thirds of the length of the larger hand, and the upper margin of the palm is a little granular or rugose. The fingers of the smaller hand are distinctly longer than the palm; and they meet along the whole length of their inner margins, and do not at all gape; they have pointed crossing tips; and both fingers are slightly longitudinally grooved, and appear minutely granular along these grooves. The inner margins are feebly toothed. I may observe that in the larger hand of young male specimens the fingers are less gaping and the palm appears slightly granular on its upper margin.

The anterior legs of the female are much smaller than those of the male, and are also somewhat unequal, although never differing so much from one another as do those of the male. The wrist presents a more rugose upper surface. The hands are similar to the smaller hand of the male as regards their outer appearance, the fingers being slightly longer than the palm and meeting along their whole inner margins. The palm of the larger hand appears slightly granular on its outer surface, and the palms of both hands on their upper margins. The fingers have pointed tips, and are feebly denticulated along their inner margins, and in the fingers of the smaller hand of the male they are faintly longitudinally grooved and minutely granular along the margins of these grooves.

The ambulatory legs present the usual slender form, and are similar to those of *T. Stoliczkana* except that their dactylopodites, the outer and inner surfaces of which are quite smooth and plain, or scarcely convex, never present any traces of longitudinal grooves or ridges, and are, moreover, less tapered towards their tips, and therefore somewhat obtuse, as the spines with which their joints are armed are continued close to their tips.

Dimensions of the two largest specimens :—

	♂. millim.	♀. millim.
Length of the cephalothorax (the abdomen excluded)	13½	12½
Distance between the external orbital angles	12¾	12¼
Distance between the epibranchial teeth . .	15⅔	14¾
Breadth of the anterior margin of the front	5¾	5½
Length of the larger hand	16	9½
Height of the larger hand (at base of the fingers)	8	4½

Dr. Anderson kindly compared this species for me with the (single) type specimen of White's *Telphusa grapsoides* preserved in the British Museum. *Telphusa grapsoides* has a more square cephalothorax, the length of which is nearly equal to the distance between the epibranchial teeth, and the front is more prolonged forwards. The anterior or internal (median) portion of the post-frontal ridge is very feebly, if at all, marked in White's species, but the posterior or external portion presents the same form and direction in both species.

The dimensions of the type specimen of White's *T. grapsoides* are as follows :—

	♂. millim.
Length of the cephalothorax (abdomen excluded)	16
Distance between the external orbital angles	13½
Distance between the epibranchial teeth	16⅕
Breadth of the front	6

Telphusa grapsoides, which I have never seen, inhabits the Philippine Islands.

Telphusa lævis, Wood-Mason, from Central India, is also more or less similar to this species, but differs from it in its more enlarged cephalothorax, the different form of the abdomen of the male, &c.

64. TELPHUSA CABINIFERA, n. sp. (Pl. VI. figs. 4 & 5.)

The Collection contains a third species of the genus *Telphusa*, a single male specimen of which was collected in Elphinstone Island Bay.

Dr. Hilgendorf, who kindly compared it for me with the species

of *Telphusæ* in the Zoological Museum of Berlin, informed me that it was not represented in that Museum. Though closely allied to *T. Callianira*, it is distinguished from it at first sight by the more enlarged front and, probably even from all other *Telphusæ*, by the remarkable structure of the postfrontal ridge.

The outer appearance of the cephalothorax is very similar to that of *Telphusa Callianira*, being rather narrow, although broader than long, and having the epibranchial regions scarcely if at all inflated. The proportion of the distance between the epibranchial teeth to the length of the cephalothorax (the abdomen not included) is as 16:13, so that the carapace is comparatively a little broader than that of *Telphusa Callianira*. The upper surface is rather depressed; anteriorly it is very declivous and the front is strongly deflexed. The proportion of the distance between the epibranchial teeth to the breadth of the anterior margin of the front is as 16:7½, so that the front is almost half as broad as the distance between the epibranchial teeth. The anterior margin of the front presents a wide but very shallow median sinus. As in the preceding species, the frontal margin forms a right angle with the upper margins of the orbits, and the upper surface of the front is somewhat granular. The upper surface of the carapace has nearly the same structure as that of *T. Callianira*. The postfrontal ridge is interrupted in the middle by the median frontal furrow, and again on each side at some distance from the epibranchial teeth; the two median (or internal) portions are therefore, as in the preceding species, more advanced than the lateral, from which they are completely separated. The anterior or median portions of the ridge, which occupy as usual the epigastric lobes, do not constitute a single ridge, but are composed of four or five smaller, parallel, rugose elevated lines. The lateral portions, however, are ridge-like and directed towards the epibranchial teeth; but are not continued so far, as they are interrupted at some distance from the lateral margins. As in *T. Callianira*, one or two rugose lines are observed immediately behind the interruption. This species therefore probably differs from all other *Telphusæ* by the occurrence of two accessory median ridges immediately behind the postfrontal ridge, *i. e.* at some distance behind the internal or median portions of the latter, one on each side of the median frontal furrow. These ridges are not continued behind the lateral

portions of the postfrontal ridge. As in *T. Callianira*, the upper surface of the cephalothorax presents on each side a transverse, somewhat oblique impression behind the lateral portions of the postfrontal ridge; these impressions are bordered posteriorly on each side by a transverse elevated line, which proceeds from the external margin of the epibranchial tooth towards the mesogastric region. The orbital margins are smooth and entire. The external angles of the orbits are but little prominent, and the external margin of these angles appears smooth and entire. The epibranchial tooth is about as prominent as that of *T. Callianira*. Behind this tooth the lateral margins of the cephalothorax are marked with numerous, oblique, piliferous elevated lines. The posterior margin of the cephalothorax, which is somewhat concave in *T. Callianira*, is perfectly straight in this species.

The posterior half of the upper surface is somewhat punctate, and the gastric region is minutely rugose behind the six ridges or ridge-like elevations with which the cephalothorax is marked anteriorly. The pterygostomian regions and the inflected sides of the carapace are faintly rugose.

As regards the outer foot-jaws, the characteristic longitudinal impressed line, which in many species is found on the outer surface of the ischium-joint, is completely wanting in this species.

The male abdomen is triangular and less narrowed towards the terminal half than in *T. Callianira*. The lateral margins of the penultimate joint are somewhat converging towards the anterior margin of this joint, the posterior margin of which is much broader than long. The terminal segment, which is rounded at the tip, and the lateral margins of which are slightly concave, is about as long as broad at its base.

As the smaller chelipede is wanting, I can only describe the larger one. The arm and the wrist present the same structure as in *T. Callianira*; the hand also much resembles that of the preceding species, but the lower finger is not at all deflexed. The fingers are distinctly shorter than the palm, which has the outer and inner surfaces quite smooth and convex; the under margin of the palm is rounded and smooth, the upper margin is minutely granular. The mobile finger is slightly arcuated, gaping, and minutely granular above; both fingers are grooveless, the index scarcely presenting any trace of a longitudinal groove near the tip. In their denticulation the fingers wholly agree

with those of *T. Callianira*, and the under margin of the lower finger is minutely granular near the tip.

The ambulatory legs are unfortunately wanting, except the left leg of the last pair; this leg closely resembles the corresponding leg of *T. Callianira*, but the propodite is comparatively a little shorter and broader. The dactylopodite is flattened and not grooved or ridged.

Dimensions:—

	millim.
Length of the cephalothorax	10 $\frac{2}{3}$
Distance between the epibranchial teeth	13 $\frac{1}{6}$
Distance between the external orbital angles....	11 $\frac{1}{3}$
Length of the larger hand (fingers included)....	10 $\frac{1}{2}$
Height of the hand	5 $\frac{1}{4}$
Breadth of the front	6 $\frac{1}{6}$

Genus PINNOTHERES, *Latr.*

65. PINNOTHERES EDWARDSI, n. sp. (Pl. VI. figs. 6-9.)

The collection contains one adult female specimen of a *Pinnotheres*, provided with eggs, which was found in an *Ostrea* at King Island Bay.

I regard this species as new. So far as I know, eight species of the genus *Pinnotheres*, besides the European *P. pisum* (which, according to Heller, occurs also in New Zealand), have been described as inhabiting the shells of Mollusca in the Indian Ocean.

Although the specimen before me agrees in many of its characters with the European *P. pisum*, it appears to be distinguished from it by the shape of its external maxillipeds and by the short down with which the whole animal is nearly covered.

It closely resembles *P. pisum* in the shape of its cephalothorax, but the front is a little more prominent and the carapace is somewhat more laterally dilated, the antero-lateral portion of the lateral margin making a blunt angle with the postero-lateral portion. The upper surface is a little convex, and the grooves or depressions by which the gastric, cardiac, and intestinal regions are separated from the lateral regions of the upper surface are rather deep, whereas in *P. pisum* these impressions are quite indistinct.

The whole upper and under surfaces of the cephalothorax, the external maxillipeds and the abdomen included, appear to have

been covered with a very short dense down, but it seems to have been rubbed off the prominent parts of the upper surface, as it is now found only in the grooves and depressions.

The shape of the external maxillipeds may be easily recognized by the figure. The merus-joint is much longer than broad and not simply rounded at the distal end. It appears rather quadrilateral, the arcuated outer and the concave inner margin having the same length and being much longer than the two other margins situated at the distal end; these margins make a nearly right angle with each other, and the anterior one, on which the palpus is inserted, is a little concave, the other somewhat arcuated. The palpus is rather large; its penultimate joint, which is nearly once and a half as long as the antepenultimate, has a characteristic form, being somewhat dilated towards the distal end, where it is obliquely truncated. The dactylopodite is rather short, and does not extend beyond the distal end of the penultimate joint.

The legs are quite similar to those of *P. pisum*, but they are a little shorter in proportion to the cephalothorax, and the joints are somewhat less slender. The chelipedes perfectly resemble those of *P. pisum*. The ambulatory legs have all nearly the same length; those of the third pair are not longer than the legs of the first and the second pair, and those of the fourth pair are not shorter than the legs of the third pair. The dactylopodites of the ambulatory legs have all the same length, being somewhat shorter than the propodites; they are a little arcuated, and each terminates in a very acute point.

The chelipedes and the other legs are covered with a short dense down, with interspersed longer hairs.

Dimensions:—

Breadth of the cephalothorax	16 millim.
Length of the cephalothorax	15 „
Length of the ambulatory legs	14 „

This species, with which I have much pleasure in associating the name of the eminent carcinologists of the Muséum du Jardin des Plantes, is evidently closely allied to *Pinnotheres Rouxi*, M.-Edw., and to *P. villosus*, Guér., from the Indian seas; but it differs from these in the shape of its maxillipeds, and from *P. Rouxi* moreover by the short down with which it is covered.

66. PINNOTHERES PARVULUS, *Stimps.*

Pinnotheres parvulus, *Stimpson, Proceed. Acad. Natural Sciences Philadelphia*, 1858, p. 108.

The Collection contains three other specimens of a *Pinnotheres*, all provided with eggs, and found in *Pinna atropurpurea* and *P. vexillum*, from King Island Bay. I refer them to Stimpson's *Pinnotheres parvulus*.

This species closely resembles *P. globosus*, Hombr. & Jacq. (= *obesus*, Dana), in its outer appearance; but it is distinguished from it by the relative length of the ambulatory legs and of their joints. In *P. globosus* these appendages are very slender and successively decrease in length, those of the third, or penultimate pair, being a little shorter than those of the antepenultimate pair, and the fourth or last pair is the shortest of all. The dactylopodites of all the ambulatory legs have nearly the same length in Dana's figure.

In these specimens, on the contrary, the ambulatory legs of the first pair are the shortest of all, those of the second pair are but little longer; the legs of the third pair, however, are much longer than the two preceding pairs and are the longest of all, for the legs of the fourth pair, though distinctly longer than those of the first two pairs, are shorter than the legs of the penultimate pair. The meropodites of all the ambulatory legs have nearly the same length, except those of the third pair, which are once and a half as long as those of the other legs. The carpopodites of the legs of the third pair are almost twice as long as those of the first pair, and the carpopodites of the last pair are a little shorter than those of the first pair. The propodites also gradually increase in length from the first to the third pair, those of the latter being nearly twice as long as the propodites of the first pair of legs. The propodites of the fourth pair are nearly as long as the meropodites of the same legs, and a little shorter than the propodites of the penultimate pair.

The dactylopodites of the first two pairs are rather short, scarcely surpassing half the length of the propodites of these legs. Those of the third pair are distinctly longer, measuring about two thirds of the propodites of these legs. The dactylopodites of the last pair are very similar to those of *P. globosus* (Milne-Edwards, *Ann. Sci. Nat.* t. xx. 1853, pl. xi. fig. 6 a), and are the longest of all the dactylopodites, being but little shorter

than the propodites of these legs. The legs are somewhat hairy towards their extremities.

The external maxillipeds are quite similar to those of *P. globosus*.

The crabs above described are about 10 millim. broad.

Pinnotheres parvulus was discovered by Stimpson in shells of *Meroë quadrata* from the Chinese sea; and the Leyden Museum contains specimens found in shells of *Cytherea* from the coast of Padang, Sumatra.

Genus XANTHASIA, *White*.

67. XANTHASIA MURIGERA, *White*.

Xanthasia murigera, *White, Ann. & Mag. Nat. Hist.* 1st ser. vol. xviii. 1846, p. 177, pl. ii. fig. 3.

Xanthasia murigera, *Milne-Edwards, Ann. Sci. Nat.* t. xx. 1853, p. 221; *Alph. Milne-Edwards, Nouv. Arch. du Muséum Hist. Nat.* t. ix. p. 321.

The Collection contains two female specimens, the larger of which is provided with eggs, whereas the other is sterile; they were found in *Tridacna crocea*, Lam., at Owen's Island.

The cephalothorax of the larger specimen is 11 millim. broad and 10 millim. long. In both specimens the lateral margins are elevated into a thin acute crest or ridge, which, as *White* rightly describes, is curled round, on each side, behind the lateral knob, on the front of the carapace. In the smaller specimen both lateral margins are continuous, passing into one another at the posterior margin of the cephalothorax; but in the larger specimen they do not pass into one another, the posterior margin being interrupted, though only by a narrow space, in the middle. The front, the upper surface of the elevated prominence on the middle of the carapace, and the outer surface of the posterior margin of the latter, are minutely and irregularly granular. The female abdomen, which bulges extremely, is coarsely and irregularly punctate, but the wide rounded keel which it presents in the middle is smooth.

Xanthasia murigera has been recorded from the Philippine and Fiji Islands, and from New Caledonia.

68. XANTHASIA, sp. (Pl. VII. fig. 1.)

The Collection also contains two other specimens of this genus, found in the mantle-cavity of a *Tridacna gigas* in Elphinstone Island Bay. As the upper surface of the cephalothorax of these

crabs presents a somewhat different appearance from the cephalothorax of *X. murigera*, I am inclined to regard them as a distinct species. They differ from it in the following characters:—The crests or ridges are rather rounded and not thin or acute, and the anterior curls are indistinct or quite absent; they also pass into the raised, broad, and nearly straight, posterior margin, which projects much more backwards than in *X. murigera*, and forms a right angle with the lateral margins. The length of the carapace in these specimens therefore measures more than the distance between the raised lateral margins.

The legs also are more elongated and more slender than in typical representatives of *X. murigera*, all the joints presenting this character, especially the hands and the meropodites, carpopodites, and propodites of the ambulatory legs.

The integument not being strong and solid, but rather pliant and similar to parchment, I am inclined to regard the different shape of the carapace as an individual variety. I do not venture to decide this question, but, as the legs are also more slender and more elongate than those of *Xanthasia murigera*, these specimens may perhaps prove to represent a distinct species, for which I would propose the name of *Xanthasia Whitei*.

Dimensions of the larger ova-bearing specimen:—

Length of the cephalothorax	14 millim.
Distance between the raised lateral margins ..	12½ „
Length of the legs of the antepenultimate pair	22 „
Length of the hands, the fingers included	7 „

Genus OCYPODA, *Fabr.*

69. OCYPODA CERATOPHTHALMA, *Pallas.*

Cancer ceratophthalmus, *Pallas, Spicil. Zool. fasc. ix. p. 83, pl. v. fig. 17 (1772).*

Ocyпода ceratophthalma, *Fabricius, Suppl. Entom. Syst. p. 347; Milne-Edwards, Hist. Nat. des Crustacés, t. ii. p. 48, and Ann. Sci. Nat. 3^e série, t. xviii. p. 141.*

Ocyпода ceratophthalma, *de Man, Notes from the Leyden Museum, vol. iii. 1881, p. 245.*

Ocyпода ceratophthalma, *Miers, Ann. & Mag. Nat. Hist. 5th ser. vol. x. 1882, p. 379.*

Twenty specimens of this common Indian species were collected, all being very young, except one nearly adult female.

Sixteen specimens were collected at Sullivan Island, and four at Owen Island.

All belong to that variety in which the epibranchial angles of the lateral margins of the carapace project nearly equally, or scarcely more outwardly than the external orbital angles.

Ocypoda ceratophthalma has been recorded from Port Natal, Madagascar, Mauritius, Malayan Archipelago, Torres Strait, Celebes, Philippines, New South Wales, the Fiji, Samoa, and Sandwich Islands, from Japan and the Chinese Sea (Amoy).

70. OCYPODA CORDIMANA, *Latr.*

Ocypoda cordimana, *Latreille, Milne-Edwards, Hist. Nat. des Crust.* t. ii. p. 45, and *Ann. Sci. Nat.* t. xviii. p. 143; *Alph. Milne-Edwards, Nouv. Arch. du Muséum Hist. Nat.* t. ix. p. 271.

Ocypoda cordimana, *de Man, Notes from the Leyden Museum*, vol. iii. 1881, p. 248.

Ocypoda cordimana, *Miers, Ann. & Mag. Nat. Hist.* 5th ser. vol. x. 1882, p. 337.

Nec Ocypoda cordimana, *de Haan, Fauna Japonica, Crustacea*, p. 57, tab. xv. fig. 4.

Nine specimens (7 ♂, 2 ♀) were collected at Sullivan Island, two of which were found in fresh water.

Ocypoda cordimana has been collected at Mauritius, the Seychelles, Ceylon, the Malayan Archipelago (Java, Borneo, Xulla-Bessy, Sanghir), New Caledonia, New Hebrides, the Fiji Islands, and China (Amoy).

GENUS GELASIMUS, *Latr.*

71. GELASIMUS DUSSUMIERI, *M.-Edw.* (Pl. VII. figs. 2-7.)

(Compared with a typical specimen from the Paris Museum.)

Gelasimus Dussumieri, *Milne-Edwards, Ann. Sci. Nat.*, 3^e série, t. xviii. p. 148, pl. iv. fig. 12.

Gelasimus Dussumieri, *Hilgendorf, Reise von v. d. Decken in Ost-Africa, Crustaceen*, p. 84, Taf. iv. fig. 1; *Alph. Milne-Edwards, Nouv. Arch. du Muséum Hist. Nat.* t. ix. p. 274.

The Collection contains no fewer than fifty-seven fine and well-preserved specimens (30 ♂, 27 ♀) of this species, forty-two of which were collected in a freshwater stream in Kisseraing Island.

The following full description of this common Indian species is given, because it is still insufficiently known, and because the form

presents some varieties, which it will be useful to record. The rich materials at my disposal have enabled me to study the slight variations which are presented by the cephalothorax and by the larger hand of the male; and I have compared them with a typical specimen of this species from the Paris Museum, so that my identification may be accepted as correct.

Gelasimus Dussumieri belongs to that section of the genus which is characterized by a narrow front between the eyes; but it may be distinguished from the other species of the section chiefly by the shape of its cephalothorax and by the form of the larger hand of the male.

The cephalothorax of the adult male (Pl. VII. fig. 2) has a smooth and bright upper surface, which is very arcuate and convex longitudinally, and for the shape of which I refer to my figure. The front, which has been well figured by Hilgendorf (*l. c.* fig. 1*b*), is very narrow and constricted between the insertion of the eye-peduncles, and is again enlarged a little below at the rounded anterior margin, where it presents a minute, triangular, median incision. The median furrow extends a little beyond the middle of the front and is very narrow and linear; between the insertion of the eye-peduncles its breadth measures a little less than a third of that of the front, so that the raised margins, which border the furrow on each side, appear a little broader than the furrow itself, which is nearly equally broad along its whole length. In very young males, in which the distance between the external orbital angles measures 14 millim., the median frontal furrow is a little broader, so that its breadth somewhat surpasses that of the lateral margins. These raised lateral margins of the front pass laterally into the sinuated upper margin of the orbits. The latter is bordered below by an accessory line at a short distance from it, running parallel to the upper margin nearly from the spot where the thickened basal portions of the eye-peduncles pass into the slender stalk, near to the point where the latter passes into the cornea. The upper wall of the orbits therefore presents a long narrow stripe between the upper margin and that accessory line; this stripe appears a little broader in the female than in the male, the distance between the upper orbital margin and the accessory line being a little shorter in the male than in the female.

The external orbital angles are very acute and directed

obliquely forwards. In the adult male the antero-lateral margin* of the carapace makes a very obtuse angle with the postero-lateral, so that the former is easily distinguished from the latter, when the upper surface of the carapace is viewed from above, as in fig. 2. But at a somewhat younger age the postero-lateral margin often does not form an angle with the antero-lateral, so that in these individuals both margins form a single straight line which extends obliquely backward from the external orbital angle. The upper surface of the carapace therefore in these cases has a somewhat different shape, and a specimen presenting this character has been figured by Mr. Hilgendorf (Taf. iv. fig. 1). But in other males of the same size the carapace resembles that of the first described adult form. In the female, the lateral margin often appears minutely granular, but it is smooth in the male. In the adult male the postero-lateral margin becomes indistinct long before it reaches the posterior margin of the carapace, but in the female it remains visible for more than half its length. In consequence of this oblique course of the lateral margins, the carapace is much narrowed posteriorly and is broad in front. The inferior margin of the orbits is minutely crenulate, both in the male and in the female, except a small internal portion of it, about as long as the external antennæ, which is entire. This inferior orbital margin appears everywhere simple, and does not present even a trace of that accessory line which occurs very distinctly in *Gelasimus forceps*, M.-Edw. The pterygostomian regions are very convex, somewhat rugose, and covered with short hairs, both in the male and in the female.

The male abdomen closely resembles that of *Gelasimus arcuatus*, de Haan, the fifth joint being the longest of all, and the sixth being a little shorter than the fourth.

In its general appearance the larger chelipede of the male seems closely to resemble that of *Gelasimus arcuatus* of the 'Fauna Japonica.' The upper margin of the arm is a little granular, and the anterior margin is provided with some small, acute, unequal teeth at its distal end; the anterior and the

* The epibranchial angle is that point where the lateral margin of the cephalothorax is crossed by the oblique line which is found on the lateral surfaces of the carapace. The antero-lateral margin is the line between the external orbital angle and the epibranchial angle; and the postero-lateral margin is the rest of the lateral margin.

external (or posterior) surfaces of the arm are also minutely granular.

The upper rectangular surface of the carpopodite is covered with small granules, and its anterior margin is fringed with rather long hairs. The hand of the adult male is very large, and measures nearly twice the distance between the external orbital angles, but it never surpasses this length. The breadth of the palm measured in the middle between the upper and under margins amounts nearly to a third of the whole length of the hand, so that the fingers are about twice as long as the palm. Sometimes, however, the palm is comparatively shorter and the fingers are still more elongate, as represented in fig. 6. The slender fingers are strongly compressed laterally, and the index tapers regularly to the tip; but the mobile finger begins to taper only a little before the pointed hooked extremity. The inner margin of the immobile finger is armed with a tolerably strong tooth a little before the middle (fig. 4), but for the rest it is unarmed and terminates in an acute point, curved slightly upwards. The tooth of the immobile finger is occasionally little developed, and a similar hand has been figured by Milne-Edwards (*l. c.* pl. iv. fig. 12); and in the variety which I have figured in fig. 6 the index appears even wholly unarmed along its entire length. The inner margin of the thumb only is granular and it is never armed with a tooth; two somewhat prominent granules, however, are found on it, the proximal of which is situated near the articulation with the palm and the second immediately beyond the tooth of the lower finger. In the variety which I have figured (fig. 6) one of these two prominent granules is absent. The outer surface of the palm is everywhere rather coarsely granulated, and the upper margin bears two rows of granules. This granulation is continued along the upper margin of the thumb and the lower margin of the index, but disappears towards the extremities of the fingers, the inner margins of which are also granulated. Each finger presents an impressed line on its outer surface, running parallel to the inner margins.

The inner surface of the palm is minutely granular only between the two more coarsely granulated oblique crests with which it is provided, whilst the triangular under surface, between the inferior oblique crest and the under margin, is flattened and appears wholly smooth. The inner surface of the fingers also is

wholly smooth and devoid of granulations. Sometimes, as in the specimen which I have figured (fig. 4), the index is a little shorter than the thumb, but this may be abnormal.

At a somewhat earlier age the fingers are comparatively less elongate; a very accurate figure of the hand of such a specimen has been published by Hilgendorf (*l. c.* fig. 1 *c*). In still younger individuals, in which the distance between the external orbital angles measures 20 millim., and in which the hand is only 21 millim. long, the palm presents nearly the same length as the fingers (fig. 7). In specimens in which the distance between the external orbital angles measures only 10 millim., and the larger hand of which is 7-8 millim. long, the fingers are even a little shorter than the palm.

For the form of the ambulatory legs, which are tolerably slender in this species, I refer the reader to my figure and to that given by Mr. Hilgendorf. The following details, however, may be mentioned. The upper margin of the meropodites of the adult male is minutely granular along the distal, and hairy along the proximal half; along the upper and under margins of the meropodites of the three anterior ambulatory legs of the female this granulation is much more developed, the acute granules of the upper margins being arranged in two rows close to one another. In the female a tuft of close short hairs occurs along the under (posterior) margin of the meropodites of the last pair of legs; but it is absent in the male.

The cephalothorax of some of these specimens, preserved in spirit, is dark bluish, whilst in others it is dark green; the larger hand is yellowish or reddish brown.

Dimensions of an adult male specimen:—

	millim.
Distance between the external orbital angles..	33
Length of the carapace (front included)	19
Length of the posterior margin between the insertion of the last pair of legs	13
Length of the larger hand	60
Middle length of the palm	20
Length of the fingers	40

Among the other species of *Gelasimus* which inhabit the Indo-Pacific Ocean, this species appears to be most closely allied to *G. arcuatus*, de Haan, which, however, may be distin-

guished from *G. Dussumieri*, at first sight, by the somewhat different shape of its carapace, especially by the different direction of its margins. Although *G. arcuatus* has been found in the seas of Japan and New Caledonia, it has not yet been recorded from the Indian Ocean.

Gelasimus Dussumieri has been recorded from Zanzibar, the coast of Malabar, Java (Samarang), and from New Caledonia; so that it seems to be distributed throughout the whole Indian Ocean and the Malayan Archipelago.

The collection of the Leyden Museum contains specimens from Nossy-Faly (near Madagascar), which have been described by Hoffmann (*Crustacés de Madagascar*, 1874, p. 17); but as they differ only from the type of *G. Dussumieri* in the meropodites of their ambulatory legs being slightly more enlarged, and in the joints of these appendages being a little less slender, I regard them only as a local race, or possibly individual varieties of this species.

72. *GELASIMUS ACUTUS*, *Stimps.* (Pl. VII. figs. 8 & 9, and Pl. VIII. figs. 1-4.)

Gelasimus acutus, *Stimpson*, *Proceed. Acad. Nat. Sci. Philadelphia*, 1858, p. 99.

No fewer than sixty-six specimens were collected, namely forty-eight males and eighteen females. Of forty-six specimens the exact locality is not indicated; the others are from the following localities: twelve from Kisseraing, three from King Island, two from Zediwon on the Tenasserim river, two from the bank of Rangoon river, and one from Tavoy.

This species belongs to the same section of the genus as the last. It was discovered by Stimpson off the coast of China, near Macao, and was established by him for the reception of an immature individual, in which the distance between the external orbital angles measured nearly 18 millim., the length of the carapace 10 millim., and that of the larger hand about 22 millim. Specimens from the Mergui Collection which present these dimensions fully agree with Stimpson's diagnosis.

Gelasimus acutus is most closely allied to *G. Dussumieri*, especially in the shape of its carapace, but it may be distinguished by the form of the median frontal furrow and at first sight by the

different form of the larger hand of the male, the index of which is constantly armed with two teeth, whereas the immobile finger of the larger hand of *G. Dussumieri* is armed with only one.

The cephalothorax of the largest specimen closely resembles the variety of *G. Dussumieri* described above, which is distinguished by the antero-lateral margin of the cephalothorax not making an angle with the postero-lateral, so that both margins form a single line directed obliquely backwards. In *G. acutus* also the antero-lateral margin never makes an angle with the postero-lateral, at least in none of the Mergui specimens, in the largest of which the distance between the external orbital angles is 25 millim. Nevertheless the cephalothorax may be distinguished even from that variety of *G. Dussumieri*, 1st by its length being somewhat shorter in proportion to its breadth, and 2nd, by the form of the frontal furrow.

The narrow front is scarcely constricted between the insertion of the eye-peduncles, and the rounded anterior margin presents a minute median incision, as in *G. Dussumieri*. The median furrow of the front of *G. acutus* is constantly very broad and much broader than the lateral margins of the front, beyond the middle of which it extends; by this character it therefore differs from *G. Dussumieri*. As in that species, the upper orbital margin is bordered below by an accessory line, which is a little more distinctly granulated. The external orbital angles are very acute and directed obliquely forwards. The epibranchial angle is indistinct, the antero-lateral margin not making an angle with the postero-lateral. As in *G. Dussumieri*, the oblique line which occurs on the lateral surface of the cephalothorax does not reach the lateral margin, but ceases at a short distance from it. The lateral margins are directed very obliquely backward, are minutely granulated, and, as in *G. Dussumieri*, disappear long before reaching the posterior margin of the cephalothorax. The upper surface of the latter is very convex and arcuate longitudinally; although the surface seems to be smooth, it is found, when examined under a magnifying-glass, to be minutely granular and punctate, and more distinctly so in the female than in the male.

Both the males and the females of this species fully agree with *G. Dussumieri* in the form and the structure of the inferior orbital margin, of the pterygostomian regions, of the outer

maxillipeds, and even of the abdomen. Stimpson mentions a ridge on the subhepatic region, proceeding parallel to the inferior orbital margin. In *G. acutus*, as in *G. Dussumieri*, I observe a glabrous groove, immediately below the inferior orbital margin, running parallel to it, and separating this margin from the convex, hairy pterygostomial regions. But as I have already remarked, this groove is proper to both forms, and will probably be found in many other species of the genus.

G. acutus therefore closely resembles *G. Dussumieri* in the form of its cephalothorax.

As regards the occurrence of the larger chelipede on the right or on the left side: in thirty-four specimens, twenty-one have it on the right and thirteen on the left side of the cephalothorax.

In its outer appearance the larger chelipede of the male is similar to that of *G. Dussumieri*, and bears the same proportion to the cephalothorax. The three margins of the arm are granular, and the convex outer (posterior) surface of the arm is also covered with small granules; the concave inner surface is smooth and a little hairy, but the anterior surface is smooth and glabrous. The carpopodite is similar to that of *G. Dussumieri*, its rectangular upper surface being covered with small granules fringed with hairs along the anterior margin. The hand is even a little more developed than in *G. Dussumieri*, so that if *G. acutus* attains the same size as that species, its larger hand will probably also become twice as long as the distance between the external orbital angles of the carapace. The height of the hand (*i. e.* of the palm) slightly exceeds a third of the length, so that the hands of the two species much resemble one another in this character; but the fingers are less elongate and shorter in proportion to the length of the palm. In *G. acutus* the fingers are but little longer than the palm, whereas in equally large specimens of *G. Dussumieri* the fingers are once and a half as long as the middle length of the palm. The outer surface of the palm is granulated in the same manner as that of *G. Dussumieri*, and the upper margin also presents two rows of small acute granules, close to one another.

The immobile finger tapers regularly towards its extremity and is considerably curved upward; its outer surface appears smooth to the naked eye, but minutely granular with the aid of a

lens, and presents an impressed line parallel to the rounded under margin. The inner margin of the index is constantly armed with two teeth, one a little before the middle, the second a little before the acute extremity, and it moreover bears small tubercles along its whole length. In *G. Dussumieri* the index is constantly armed with one single tooth, the distal tooth not being found in this species. It is therefore always possible to distinguish the species by this character. The two teeth of the immobile finger are, however, not always equally developed; in most cases they are equal to one another, but sometimes the proximal tooth is a little larger. The thumb gradually tapers, though little, towards its hooked pointed extremity; its outer surface appears to the naked eye minutely granular near its articulation; but the whole surface, when examined under a magnifying-glass, appears to be covered with minute granules. The outer surface presents two longitudinal grooves, which, however, disappear a little before the distal third of the length of the finger; the upper broader groove runs close to the upper margin, which appears granular near the base, and the other is a faintly impressed line near the middle of the surface. The inner surfaces of the palm and of the fingers agree with those of *G. Dussumieri*; the inner surface of the palm appears a little granular between the two oblique tuberculated crests, whereas the inner surface of the fingers is quite smooth.

In younger individuals, in which the distance between the external orbital angles measures 19 millim., and the larger hand of which is 22 millim. long, the fingers are about as long or even a little shorter than the palm (Pl. VIII. fig. 4), but the distal tooth of the index is very little developed. Stimpson doubtless established the species on such a specimen. In very young male specimens, the fingers are much shorter than the palm.

In *G. acutus* there is a remarkable variety, in which the inner margins of both fingers are quite unarmed between their base and the distal tooth (fig. 3), only the latter, which is characteristic of the species, being present. Amongst thirty-four adult male specimens five belong to this variety.

The ambulatory legs much resemble those of *G. Dussumieri*, but the meropodites of the male are a little more enlarged, and

the posterior margins of the meropodites of the last pair of legs of the female are never fringed with the tuft of short hairs found in *G. Dussumieri*. The specimens in spirit have quite a different colour from the similarly preserved specimens of *G. Dussumieri*. The middle portion of the cephalothorax has a dark green colour, but the sides, including the external orbital angles, the lateral surfaces, and the pterygostomial regions, appear yellowish. In some individuals, however, the dark green or rarely bluish colour extends also upon the sides. The outer surface of the palm has a beautiful intense red colour, which is particularly rich near the articulation of the fingers and towards the inner margin. The fingers in some present a fine violet colour, while in others they are yellowish, and the ambulatory legs have also the same colour.

Dimensions.

	♂. mm.	♂. mm.	♀. mm.	♀. mm.
Distance between the external orbital angles	25	23	21 $\frac{1}{4}$	20
Length of the carapace (the front included)	14	13	12	11 $\frac{1}{3}$
Length of the larger hand.....	42 $\frac{1}{2}$	32		
Length of the palm	19	16		
Height of the palm.....	15	12 $\frac{1}{2}$		
Length of the fingers	23 $\frac{1}{2}$	16		

G. acutus may be easily distinguished from *G. arcuatus*, de Haan, and *G. coarctatus*, M.-Edw., from New Caledonia, by the shape of the cephalothorax. It is possible that some of the species described by Adams and White in the 'Voyage of the Samarang,' may prove to be identical with those of Milne-Edwards; according to Mr. Kingsley, *G. forcipatus*, Ad. and White, is identical with *G. coarctatus*.

G. acutus has hitherto been recorded only from the Chinese coast, near Macao.

73. *GELASIMUS ANNULIPES*, *Latr.* (Pl. VIII. figs. 5-7.)

Gelasimus annulipes, *Milne-Edwards*, *Hist. Nat. des Crustacés*, p. 55, pl. xviii. fig. 10-13, and *Ann. Sci. Nat.* 3 série, t. xviii. p. 149, pl. iv. fig. 15.

Gelasimus pulchellus, *Stimpson*, *l. c.* p. 100.

Gelasimus annulipes, *Hilgendorf*, *Crustaceen von Ost-Afrika*, in *Baron v. d. Decken's Reise*, p. 85; and *Monatsber. d. K. preuss. Akad. d. Wiss. Berlin*, Nov. 1878, pp. 803-805.

Gelasimus perplexus, *Milne-Edwards*, *l. c.* p. 150, pl. iv. fig. 18 (*teste Hilgendorf*).

Gelasimus annulipes, *Heller*, *Crustaceen der Novara-Reise*, S. 38.

Gelasimus annulipes, *Miers*, *Zoology of Rodriguez*, *Crustacea*, p. 4; and *Ann. & Mag. Nat. Hist.* 5th ser. vol. v. 1880, p. 310.

Gelasimus annulipes, *de Man*, *Notes from the Leyden Museum*, vol. ii. p. 69.

Gelasimus annulipes, *Kingsley*, *Carcinological Notes*, II., *Proc. Acad. Nat. Sci. Philadelphia*, 1880, p. 148*.

Thirty-three specimens (24 ♂, 9 ♀) were collected; nine adult individuals having been found at Sullivan Island, and fifteen young specimens at Elphinstone Island Bay, whereas the others are without a definite locality.

The oblique line on the lateral surface of the cephalothorax extends in this species to the epibranchial angle. The upper surface of the carapace appears minutely punctate, when it is examined under a magnifying-glass. The inferior orbital margin is simple in the male; but in the female it is bordered, at the bottom of the orbits, by an accessory row of small acute granules, close and parallel to it, thus resembling *G. forceps*, M.-Edw. This character was hitherto unknown. Among twenty males, ten have the larger hand on the right and ten on the left side. In all the specimens, except in one variety, each finger of the larger hand is armed, in addition to the other teeth, with a small tooth quite at its base. The inner surface of the palm, besides the oblique tuberculated crest near its under margin, is armed on its anterior margin with two parallel granular crests close to the articulation of the thumb (*Gelasimus pulchellus*, Stimps.). Two or three specimens also present a remarkable variation (fig. 7), differing from the type in the following characters. Although the subterminal tooth of the immobile finger is still more or less

* Kingsley evidently is wrong when uniting *G. perplexus*, M.-Edw., with *G. chlorophthalmus* (*l. c.* p. 151).

developed, the inner margins of the fingers are not armed with the three or four prominent teeth which occur in the type, but present only some small equal granules, especially in their distal halves.

This common Indian species has been collected throughout the whole Indian Ocean, the Malayan Archipelago, and the Pacific Ocean, having been recorded from Zanzibar, Mozambique, Nossi-Bé, Madras, Ceylon, Nicobar Islands, Java, the Philippines, Moluccas, New Guinea, the Fiji Islands, and Tahiti.

74. *GELASIMUS TRIANGULARIS*, *A. M.-Edw.* (Pl. VIII. figs. 8-11.)

Gelasimus triangularis, *Alph. M.-Edwards*, *Crustacés de la Nouv. Calédonie*, *Nouv. Arch. du Muséum Hist. Nat.* t. ix. p. 275.

Gelasimus perplexus, *Heller*, *Crustaceen der Novara-Reise*, p. 38, Taf. v. fig. 4 (*nec Milne-Edwards*).

Thirty-three specimens (24 ♂, 9 ♀) were collected, five of which were found at Kisseraing Island, the other specimens being without a definite locality.

This form belongs to the same section of the genus as the preceding species. In the shape of its cephalothorax it stands in the same relation to *Gelas. annulipes*, *M.-Edw.*, as *Gelas. acutus*, *Stimps.*, does to *Gelas. vocans*, *M.-Edw.* The carapace of *Gelas. acutus* is much more narrowed behind than that of *Gelas. vocans*, and the cephalothorax of *Gelas. triangularis* is much more narrowed posteriorly than that of *Gelas. annulipes*.

The specimens have been compared and identified with a typical specimen of *G. triangularis* from New Caledonia, in the Paris Museum.

I will now describe this species and compare it at the same time with *Gelas. annulipes*. The cephalothorax is strongly convex and arcuate longitudinally, and much larger in front than at the posterior margin. The upper surface appears perfectly smooth and presents no interregional grooves, so that the grooves, which in *G. annulipes* separate the gastric from the branchial and cardiac regions, are absent in this species. The median frontal groove is also scarcely visible and less distinct than in *G. annulipes*. As regards the shape of the front, both species agree with one another; in both it appears a little punctate when examined under a magnifying-glass.

The external orbital angles are extremely acute and directed transversely outwards and slightly forwards. As in *G. annulipes*, the upper orbital margin is bordered anteriorly by a minutely granulated accessory line, between the front and the orbital angle; this line is situated in this species nearer to the orbital margin than in *G. annulipes*. The oblique line on the lateral surface of the cephalothorax is even shorter than in *G. annulipes*, being almost absent. The lateral margins, consisting therefore almost exclusively of the postero-lateral portion, are directed very obliquely backwards, and, as in *G. annulipes*, they do not extend to the posterior margin. The inferior orbital margin resembles that of *G. annulipes*, but is more delicately crenulated. In the female the accessory line of granules, which is a character of the female of *G. annulipes*, does not occur in this species.

In the structure of the under surface of the carapace, of the external maxillipedes, of the convex and hairy pterygostomian regions, &c., this species is similar to *G. annulipes*. The suborbital groove, between the orbits and the pterygostomian regions, which I found also in *G. Dussumieri* and in *G. acutus*, occurs in this species and in *G. annulipes*, and is probably present in all the species of *Gelasimus*. The fifth joint of the male abdomen in *G. annulipes* is much broader than long and nearly as long as the sixth, whereas in *G. triangularis* the fifth joint is but little broader than long and much longer than the fourth and the sixth.

Among twenty-one males, the larger hand in eleven was found on the left, and in ten on the right side. The larger chelipede presents a striking resemblance to that of *G. annulipes*, but differs from it in some constant characters. The anterior margin of the arm bears a few small tubercles along its whole length, and the other margins are also minutely granular. The upper margin, moreover, is less rounded than in *G. annulipes* and is somewhat more acute. The inner, equally hairy surface of the arm in this species appears therefore more distinctly limited than in the other species. The wrist is similar to that of *G. annulipes*, the upper surface being minutely granular and the anterior margin often presents some small tubercles. The hand is nearly once and a half as long as the distance between the external orbital angles and is nearly three times as long as high. In its outer appearance it closely resembles the hand of *G. annulipes*, in the shape of its palm and the forms

of its fingers. The latter in the adult male are but a little longer than the middle length of the palm. The outer convex surface of the palm appears wholly smooth to the naked eye, but often minutely granular towards the upper margin, when examined under a magnifying-glass. On the upper margin of the palm a longitudinal groove occurs, which is not found on the rounded upper margin of the palm of *G. annulipes*. In both species there is also a longitudinal groove on the under margin of the palm, but in *G. triangularis* it does not extend upon the index. The impressed line which occurs in *G. annulipes* on the outer surface of the palm, close and parallel to the anterior margin, appears very indistinct in *G. triangularis*. The fingers are somewhat less compressed than those of *G. annulipes*, but in other respects they are very similar in both species. The index is upwardly curved and gradually tapers towards its pointed tip; its outer surface and that also of the mobile finger appear minutely punctate when examined under a magnifying-glass. The inner, rather coarsely granulated margin of the immobile finger is constantly armed with two teeth, one at the base and the other near the distal end of the middle third of the finger; the subterminal tooth which occurs on the index of *G. annulipes* is absent. The mobile finger is similar to that of *G. annulipes*, being a little longer than the index, gradually tapered and strongly arcuate towards its pointed tip. The outer surface is faintly longitudinally grooved, though more distinctly than in *G. annulipes*, but the proximal half of the upper margin appears somewhat granular in both species. The mobile finger of *G. triangularis* is armed along its inner, coarsely granulated margin with only two teeth, one quite at the base, before the basal tooth of the index, and the other almost opposite the second tooth of the latter. In typical specimens of *G. annulipes* the index is also armed, in addition to the strong subterminal tooth which is characteristic of *G. triangularis*, with three other teeth, and the mobile finger with about four.

The inner surface of the palm often appears granular towards its upper margin, and is armed with two strongly tuberculated crests, viz. the ordinary oblique crest bordering internally the under surface of the palm, and another close and parallel to the anterior margin. In *G. annulipes* the inner surface of the palm is armed with three crests, two parallel crests being

found near the anterior margin. The inner surface of the fingers is concave and perfectly smooth, as in *G. annulipes*. The ambulatory legs are somewhat less slender than those of *G. annulipes*, especially when the meropodites of the last pair of legs are compared.

Dimensions.

	♂. mm.	♂. mm.	♀. mm.
Distance between the external orbital angles	15	14	12 $\frac{1}{3}$
Length of the carapace (the front included)	8	7 $\frac{1}{2}$	6 $\frac{1}{2}$
Length of the larger hand of the male ..	20	17	
Height of the palm	7 $\frac{2}{3}$		
Middle length of the palm	9	8 $\frac{1}{2}$	
Middle length of the fingers	11	8 $\frac{1}{2}$	

The upper surface of the carapace of these specimens (preserved in alcohol) is dark bluish and marked with lighter transverse stripes and spots; in some specimens the carapace appears light green, and ornamented with transverse lines and spots of a darker colour. The larger hand appears uniformly yellowish.

Gelasimus triangularis, which is distinctly separated from the other Indian species of this group, viz. *G. annulipes*, *G. lacteus*, *G. Gaimardi*, *G. chlorophthalmus*, and *G. Latreillii*, by the shape of its carapace and the structure of its larger hand, has hitherto been recorded only from the shores of New Caledonia. It will doubtless, however, be found to occur throughout the whole Malayan Archipelago.

GENUS MACROPHTHALMUS, *Latr.*

75. MACROPHTHALMUS TOMENTOSUS, *Eyd. & Soul.*

Macrophthalmus tomentosus, *Eydoux & Souleyet, Voyage autour du Monde sur la corvette 'La Bonite,' Zoologie, t. i. p. 243, pl. iii. fig. 8 (Paris, 1841).*

Macrophthalmus tomentosus, *Milne-Edwards, Ann. Sci. Nat. 3^e série, t. xviii. p. 159; Alph. Milne-Edwards, Nouv. Arch. du Muséum Hist. Nat. ix. p. 279.*

Seven fine specimens (4 ♂, 3 ♀) were collected in the Mergui Archipelago.

This species is closely allied to *Macrophthalmus depressus*, Rüpp., and *M. japonicus*, de Haan, but it may be easily distinguished by

the shape of its carapace, which is remarkably narrowed anteriorly. Nearly the whole upper surface of the cephalothorax is covered with minute granules, but the mesogastric lobe is smooth and frequently the middle of the anterior cardiac region. The branchial regions present two somewhat oblique and parallel granular ridges, and the margins also of the cephalothorax appear granular. The lateral margins diverge considerably backwards in this species, and present three incisions, the anterior being the most distinct; the second is found nearly in the middle, or a little before the middle, of the lateral margin, and the third incision is so very indistinct, that it may easily be overlooked. A short transverse granular ridge is also found above the insertion of each of the two posterior legs, close and parallel to the posterior margin of the carapace.

The chelipedes of the adult specimens are nearly equal to one another. The upper margin of the arm is somewhat granular, also the external margin; both the upper and the anterior margins of the arm are clothed with rather long hairs. The inner surface of the arm is armed with a short, horny, longitudinal crest, situated close to and a little beyond the middle of the anterior margin and parallel to it. This crest, which was not described by Messrs. Eydoux and Souleyet, is doubtless homologous with the "musical crest" of the genera *Metaplex* and *Helice*, described further on. The chelipedes of the female, as is usual, are much smaller than those of the male, and the inner surface of the arm is not provided with the horny musical crest characteristic of the latter sex.

In the male, the upper surface of the wrist and the outer surfaces of the hands and fingers are quite smooth; the upper margin of the palm, however, is a little granular at its proximal end. Both fingers have somewhat excavated, spoon-like tips; the inner margin of the immobile finger is armed with a strong, minutely denticulated tooth a little before its middle, and with a dozen very small teeth between the large tooth and the tip. The mobile finger is minutely granular on its upper margin, when examined under a lens; and its inner margin presents a small, somewhat quadrangular tooth at the base, and fourteen or fifteen very small teeth between the quadrangular tooth and the tip, similar to those of the index. The inner surface of the palm is unarmed, smooth, and covered with a close down of hairs; in many specimens, however, and perhaps always

in the adult, these hairs are nearly wanting, being probably worn off, so that the inner surface of the palm appears glabrous. The inner surface of the fingers is always clothed with rather long hairs.

The meropodites of the antepenultimate and penultimate pairs of the ambulatory legs are rather enlarged, so that those *e. g.* of the antepenultimate pair are only twice and a half as long as broad. The dactylopodites are lanceolate and much depressed.

Dimensions of an adult male and of an ova-bearing female:—

	♂. mm.	♀. mm.
Distance between the extraorbital angles, being		
the first teeth of the lateral margins	28½	21⅔
Distance between the second teeth	30½	23⅔
Distance between the third teeth (being those		
which are found on the middle of the margins)	34	26
Length of the carapace (the front included) ..	23	18

Macrophthalmus tomentosus is a rather rare species, and has hitherto been recorded only from the Philippine Islands, the Aru Islands, and New Caledonia.

76. MACROPHTHALMUS DEPRESSUS, Rüpp.

Macrophthalmus depressus, Rüppell, *Krabben des Rothen Meeres*, p. 19, Taf. iv. fig. 6.

Macrophthalmus depressus, Milne-Edwards, *Ann. Sci. Nat.* 3^e série, t. xviii. p. 159.

Macrophthalmus depressus, de Man, *Notes from the Leyden Museum*, vol. iii. p. 255.

Two male specimens were collected along with the preceding species.

This species is most closely allied to *Macrophthalmus japonicus*, de Haan, and I have already enumerated the distinctive characters of both species in my note quoted above. In the form and structure of the cephalothorax both species completely resemble one another. In these specimens the inferior margin of the palm is rounded and granular, whereas in *M. japonicus* it is rather acute. The upper margin of the mobile finger is smooth, while in *M. japonicus* it is granular. The inner surfaces of the palms and fingers are densely clothed with hairs.

Dimensions of the larger specimen :—

Breadth of the cephalothorax (distance between the second antero-lateral teeth)	23 mm.
Length of the cephalothorax	15 mm.

I may here observe that the specimen which Mr. Miers regards as *Euplax Boscii*, Aud. (Zoology of H.M.S. 'Alert,' 1884, p. 542), is probably some other species. In *Euplax Boscii* the lower finger is not at all deflexed, so that it does not make an angle with the lower margin of the palm. *Euplax Boscii* and *M. depressus*, Rüpp., are perfectly distinct species.

Macrophthalmus depressus has hitherto been recorded only from the Red Sea.

77. *MACROPHTHALMUS ERATO* *, n. sp. (Pl. VIII. figs. 12-14.)

Seven specimens (4 ♂, 3 ♀) of this small interesting species were collected.

M. Erato belongs to the last section (B) of the genus in Milne-Edwards's Monograph, in which the eye-peduncles do not extend beyond the orbits, and in which the cephalothorax is less than twice as broad as long. In all the species of this section the inner surface of the hands is unarmed, so far as I am aware; in this new species it is, however, armed with a short acute spini-form tooth, so that *M. Erato* differs in this character from all the species of that section. It is most closely allied, as regards its outer appearance, to *M. quadratus*, A. M.-E., from New Caledonia; but it may be distinguished, according to Prof. A. Milne-Edwards, who kindly compared a specimen for me with *M. quadratus*, by the different structure of its orbits, and by its comparatively longer, more compressed, and more carinate hands.

The cephalothorax, which is as broad anteriorly as posteriorly, is once and a half as broad as long, the distance between the second antero-lateral teeth, where the carapace presents its greatest width, being, in proportion to the length, as 3 : 2. The regions are distinctly indicated by interregional grooves proper to the *Macrophthalmi*. The cervical suture is deep in its median posterior portion, which separates the gastric region from the cardiac region, as well as in its lateral branches which define the hepatic from the epibranchial region. The grooves which separate the protogastric from the hepatic region and

* *Erato*, one of the Nereids.

those which separate the epibranchial from the mesobranchial regions, are also distinct, but the branchio-cardiac sutural lines are faintly marked. The anterior is nevertheless distinctly defined from the posterior cardiac region, and even the grooves which define the mesogastric from the protogastric area are faintly indicated. Furthermore, on each side of the carapace a groove is observed close and parallel to the posterior margin of the cephalothorax, above the bases of the posterior legs.

The upper surface is granular anteriorly and on the lateral regions; the granules present the following distribution. A few granules are found on the anterior and lateral portions of the gastric region, but more numerous and somewhat larger granules are observed on the hepatic and branchial regions. No granules are found on the mesogastric and cardiac regions. The upper surface, especially posteriorly, is also seen to be punctate, when examined under a magnifying-glass, and is slightly pubescent, especially in the interregional grooves and on the lateral regions. The front is strongly, nearly vertically, deflexed; its breadth, measured between the eye-peduncles, is a fifth of the distance between the external orbital angles. Its anterior margin is slightly emarginate in the middle, and the antero-external angles are rounded; its upper surface is minutely granulate and slightly pubescent, and is bordered posteriorly by the two ridge-like, transverse, smooth, epigastric lobes, and presents a faintly marked mesial furrow, which is bifurcated immediately behind the epigastric ridges, the two bifurcations including the anterior end of the mesogastric area.

The orbits are transverse and their upper margin is minutely denticulate or crenulate. The lateral margins of the cephalothorax, which are nearly straight, present three acute teeth, including the external orbital angles. The first tooth, or external orbital angle, is acute and directed outwards and slightly forwards; the external margin of this tooth is armed with two or three minute teeth. The first antero-lateral tooth is separated from the next by a deep triangular incision. The second tooth is much larger than the first, about once and a half as long, and is very acute; being directed also transversely outwards and forwards, it projects a little more outwards than the first tooth, so that the cephalothorax presents its greatest width between the second teeth. The external margin of the second tooth is also minutely denti-

culate, presenting four or five minute teeth. The third tooth is very small, and separated from the preceding by a minute notch.

The structure of the inferior orbital margin of the male is very characteristic, and different from that of *M. quadratus*. The inferior orbital margin presents in its middle a broad, though little prominent, slightly triangular lobe, which is directed somewhat downwards, its obtuse tip being found at the internal or median side; the upper surface of this lobe is slightly concave. Behind this lobe, the inferior margin of the orbits presents a second, also obtuse, much smaller lobule, which is found at the external end of the under margin; whereas the internal or median part of the under margin, lying between the larger middle lobe and the epistome, is armed with a row of seven or eight minute rounded granules, the external one of which is the largest, whereas the others successively decrease in size towards the epistome, *i. e.* towards the inner end of the orbital margin.

The inferior orbital margin of the male *M. quadratus*, on the contrary, presents three prominent rounded lobes. In the female the inferior orbital margin is regularly and delicately crenulate, as in the female of *M. quadratus*. The eye-peduncles are quite as long as the orbits. The somewhat hairy pterygostomial regions and the inflected sides of the cephalothorax present the ordinary structure seen in other species of this genus. The external foot-jaws have also the ordinary form. The sternum and the male abdomen are smooth and glabrous, and sparsely and minutely punctate; all the joints of the male abdomen are distinct. The abdomen of the female occupies the under surface of the cephalothorax, lying between the legs, and its margins are fringed with hairs.

The anterior legs of the male are equal to one another in three specimens and unequal in the fourth; in their general appearance they resemble those of *M. quadratus*. The anterior margin of the arm, which is a little dilated at the distal end, and the two other margins, are armed along their whole length with many small acute teeth. The "musical crest" lies on the somewhat hairy, upper surface close to the middle of the anterior margin and parallel to it. The outer and the under surfaces are also hairy. The wrist presents some acute granules at its internal angle; its upper surface is smooth. The hands are

similar to those of *M. quadratus*, but they are a little longer, more compressed and more carinate. The palm is longer than its greatest vertical depth, at the articulation with the mobile finger, the length being in proportion to that depth as 15:11. The hands are much compressed; the outer surface of the palm appears smooth to the naked eye; the upper margin is carinate and granular, and the somewhat rounded under margin is also a little granular. When the outer surfaces of the palm and fingers are examined under a sufficiently powerful lens, they appear to be uniformly covered with innumerable minute granules. The inner surface of the palm is densely covered with a tuft of hair, and armed a little before the middle with an acute spiniform tooth. The cephalothorax of all other species, in which the inner surface of the hands is spiniferous, is much more enlarged, being at least twice as broad as long. The fingers resemble those of *M. quadratus*. The lower margin of the immobile finger is in a straight line with the lower margin of the palm, and its outer surface is longitudinally grooved near the under margin. The upper or inner margin presents a strong longitudinal tooth, occupying its proximal half, and this tooth is minutely crenulate or denticulate above; two or three very small teeth are also to be observed between the horny excavated tip and the large proximal tooth. As in *M. quadratus*, the fingers, when closed, meet only towards their apices, there being a hiatus between them; the inner margin of the mobile finger has a small, quadrangular, minutely crenulate tooth near its base, and a few minute teeth before the excavated tip. The spoon-like excavated tips are somewhat hairy.

The chelipedes of the female are, as usual, much smaller than those of the male. Their arms have entire margins, the upper and anterior margins being clothed with rather long hairs. The "musical crest" is wanting. The wrist is also somewhat hairy on its inner surface. The small hands, including the fingers, are nearly thrice as long as high. The palm near its lower margin presents a longitudinal groove, which extends upon the immobile finger; the upper margin of the palm and of the mobile finger are longitudinally grooved, the grooves reaching to their tip. The fingers are scarcely longer than the palm, and their excavated tips are hairy. The inner margins of the fingers present only a few very minute teeth, so that they appear entire to the naked eye. The inner surface of the palm is unarmed.